

117

THE

SEPTEMBER, 1947

Refrigeration

AIR CONDITIONING
EQUIPMENT

INDUSTRY

MERCHANDISING * INSTALLATION * MAINTENANCE

**IN THIS ISSUE:**

Markets for Frozen Food Equipment...The Law Lends a Hand
Percentage - Wise . . . Air Distribution In Air Conditioning
Money In Marine Refrigeration...You Can Take It With You



Congratulations are in order as Weber adds the new Frozel Low Temperature Self-Service Display Case to its famous *profit-making* family.

Pioneer in frozen food equipment and Super-Market development, Weber has again combined utility and eye-appeal to produce another profit-maker.

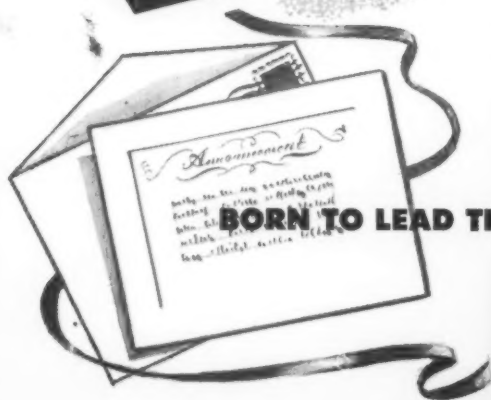
THE *NEWEST* ARRIVAL IN THE WEBER FAMILY

Here's the last word in *impulse sales* creating equipment... the result of more than fifty years' experience in the food merchandising field.



Here are more sales...more repeat customers...more *net profits* for retailers of Frozen Foods, Ice Cream and all products which require zero protection.

Now, more than ever, retail merchants all over the world agree that the *planned* installation of Weber Equipment is a *profitable investment*!



BORN TO LEAD THE FIELD IN CUSTOMERS...SALES...PROFITS

WEBER

SHOWCASE & FIXTURE CO., INC.

5700 AVALON BOULEVARD
LOS ANGELES 54, CALIFORNIA

LOS ANGELES · EL PASO



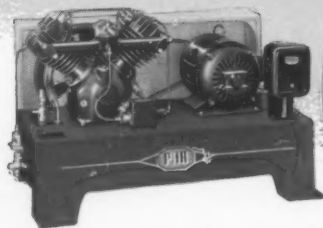
PAR

CONDENSING UNITS

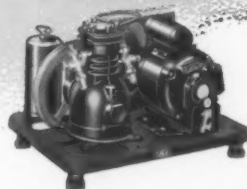


Par-Condensing Unit Line
sold exclusively through
Franchised Refrigeration
Equipment Wholesalers!

In sizes from 1/6 to 5 H.P.
... air- and water-cooled
models ... ask your Par
Wholesaler for details or
write for Par Catalog R-97.



Tops in
**PERFORMANCE
ECONOMY and
EFFICIENCY.**



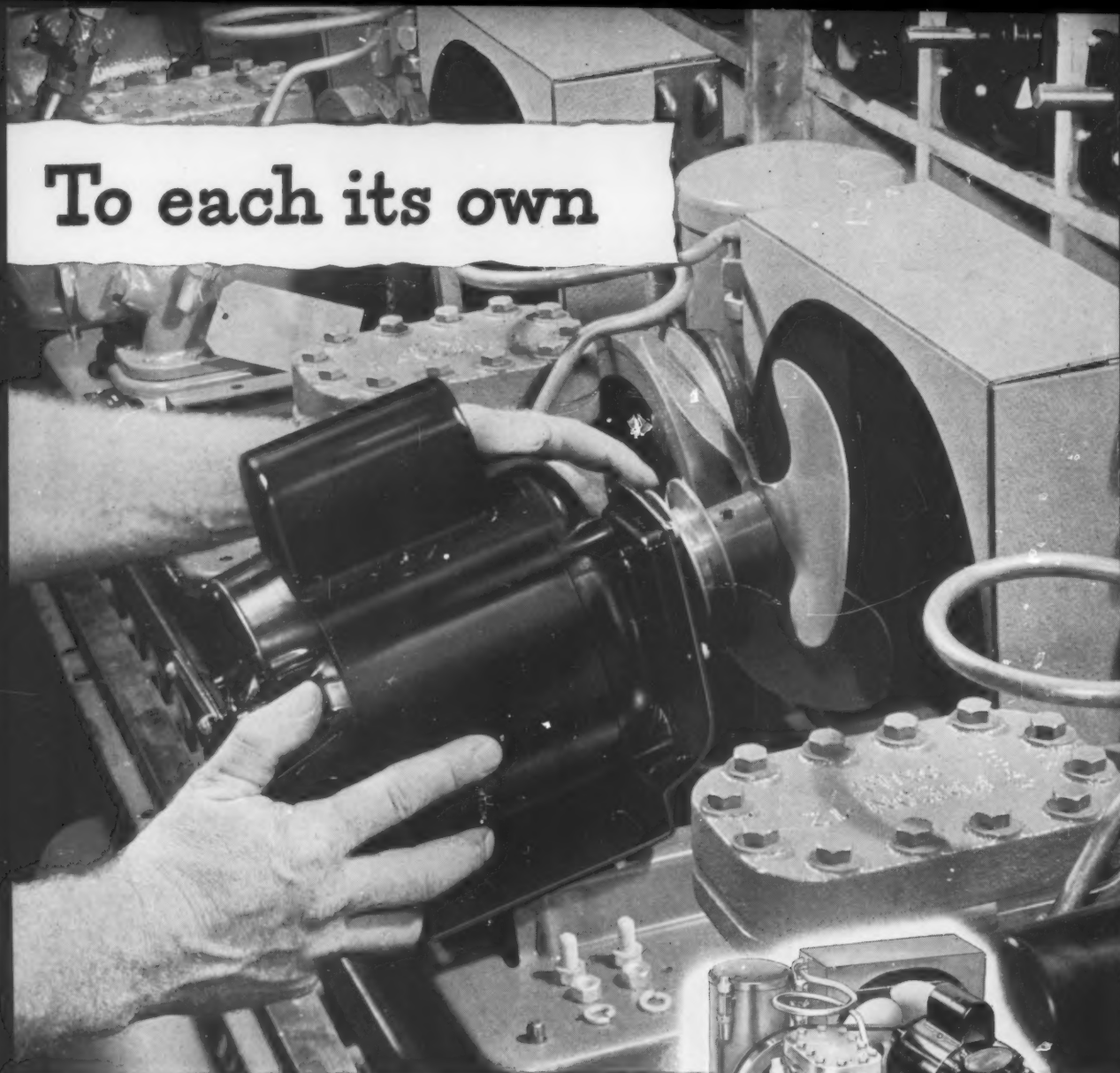
Lynch

... By Comparison — You'll Buy PAR

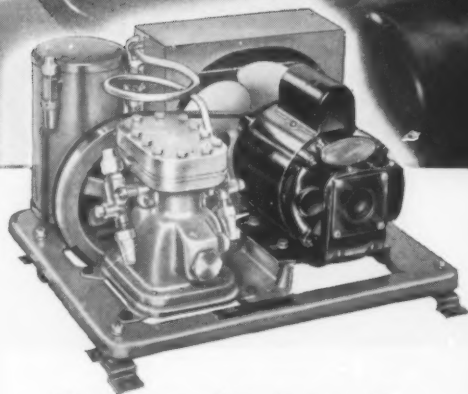
Manufacturing Corporation

General Offices, Toledo 1 • Factory, Defiance, Ohio, U.S.A.

To each its own



Each Jack & Heintz condensing unit is equipped with its own Jack & Heintz electric motor and is therefore backed by a single manufacturer with undivided responsibility. The entire unit is a product of the engineering skill and precision manufacturing for which Jack & Heintz is world renowned.



Better condensing units
through

JACK & HEINTZ

Mass Precision

JACK & HEINTZ PRECISION INDUSTRIES, INC., Cleveland 1, Ohio

THE Refrigeration INDUSTRY

VOLUME 4, NO. 9

THIS MAGAZINE has no official affiliation with ANY group, society or association.

THE COVER . . . One refrigeration condensing unit may look just like another piece of machinery, but when you see them rolling off the manufacturer's assembly line in quantities like this they form a rather impressive pattern—and also provide just a hint of the industry's total productive capacity. (Photo from Jack & Heintz Precision Industries, Inc.)

CONTENTS FOR SEPTEMBER, 1947

THEODORE T. QUINN
Editor
JAMES R. McCALLUM JR.
Associate Editor
WARREN W. FARR
H. S. McLOUD
Editorial Advisors
WILLIAM V. LINAS
Production Director
E. J. HEXTER
Circulation Director

EDITORIAL AND BUSINESS OFFICES—

1240 Ontario Street
Cleveland 13, Ohio
Prospect 1251

SALES OFFICES

CLEVELAND 13
1240 Ontario Street
HAROLD F. BEHM

NEW YORK 18
19-25 W. 44th Street
Room #12
LEE HAAS

CHICAGO 1
64 E. Lake Street
Room 1110
NORMAN J. LOTT
SAM R. TRACY



THERE'S MONEY IN MARINE REFRIGERATION	30
AIR DISTRIBUTION IN AIR CONDITIONING	33
THE FROZEN FOOD EQUIPMENT PICTURE	36
COOLING FOR HUMAN COMFORT	
Part 8 (Concluded)—Equipment Using Water	38
THE LAW LENDS A HAND	40
YOU CAN TAKE IT WITH YOU!	42
THIS DEALER IS PERCENTAGE-WISE	44
REBUILDING THE COLDSPOT UNIT (4. Starting after Assembling)	80

DEPARTMENTS

USEFUL LITERATURE	58	NEW PRODUCTS	61
RTU's	29	PRACTICAL REFRIGERATION ENGINEERING MANUAL	85
ABOUT PEOPLE	43	OVER THE COUNTER	82
REFRIGERATION INDUSTRY NEWS	47	OPPORTUNITIES	87
CONTRACTOR ACTIVITIES	52	INDEX OF ADVERTISERS	88
HERE'S HOW	73		

Published monthly by REFRIGERATION PUBLICATIONS, INC., Cleveland, Ohio. IRVING B. HEXTER, president; LESTER P. AURBACH, vice president. An affiliate of INDUSTRIAL PUBLISHING CO., publishers of DIE CASTINGS, FLOW, INDUSTRY & WELDING, OCCUPATIONAL HAZARDS, and THE TAXICAB INDUSTRY. Copyright, 1947, by Refrigeration Publications, Inc. Member, Controlled Circulation Audit, Inc.

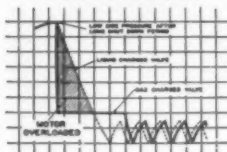
Subscription rates: United States and possessions, \$2.00 per year; Canada, \$3.50; Foreign, \$4.00. Single copy price, 25 cents. All subscriptions subject to individual acceptance by the publisher.

Acceptance under the Act of June 5, 1934, at Milwaukee, Wisconsin, authorized March 26, 1947.

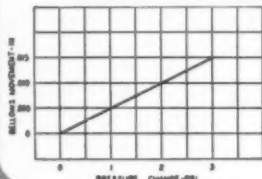
Let's Analyze Quality -

These add up to Perfect Refrigerant Control

GAS CHARGED FOR MOTOR PROTECTION



BELLOWS FOR WIDE RANGE FLEXIBILITY



SWIVEL TYPE NEEDLE NO RUBBING—NO LEAKS

These Add up to Flexibility of Installation

GAS CHARGED POWER ELEMENTS FOR HIGH AND LOW TEMPERATURE

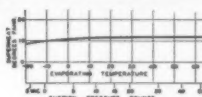
STANDARD OUTLETS AVAILABLE— $\frac{1}{4}$ " FPT $\frac{3}{8}$ " OR $\frac{1}{2}$ " S.A.E.

STANDARD ORIFICES $\frac{3}{64}$ "— $\frac{1}{4}$ "— $\frac{3}{32}$ "— $\frac{1}{8}$ "

INLET SUITABLE FOR $\frac{1}{4}$ " OR $\frac{3}{8}$ " LIQUID LINE

CONTROLLED FRICTION FOR ANTI-CHATTER

BELLOWS SELECTED FOR CONSTANT SUPERHEAT



FLEXIBLE COILED FEELER BULB MAY BE SHAPED TO FIT SUCTION LINE

These Add up to Customer Protection

STAINLESS STEEL SPACER WITH SILVER SOLDERED JOINTS

DURAFLEX BELLOWS

DELUBALOY NEEDLE AND SEAT

STRAINER FURNISHED WITH VALVE

They all add up to The Famous Quality of
"Detroit" No. 673 Valve—"The Standard Of The Industry"

2708

DETROIT LUBRICATOR COMPANY



DETROIT

General Offices: 5900 TRUMBULL AVENUE, DETROIT 8, MICHIGAN

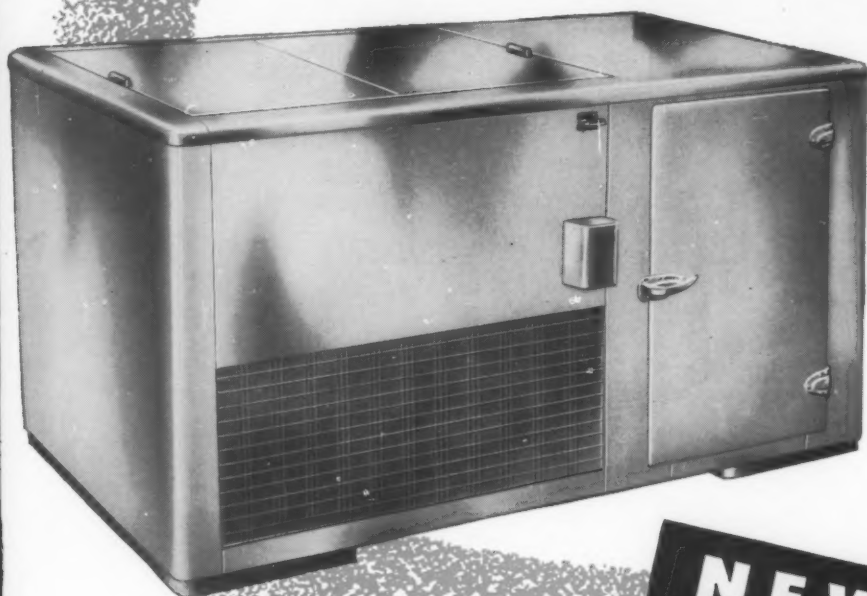
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"Detroit" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

**NEW LOW
PRICE**

Only **\$385** f.o.b. factory



Five Sided Refrigerated Pure Virgin Copper Tank. Refrigerant lines soldered on five sides to copper tank and concealed in walls.

NEW

**THE IDEAL
UNIT FOR**

RESTAURANTS	HOSPITALS
ROADSIDE STANDS	SODA FOUNTAINS
DAIRY STORES	BEVERAGE
RECREATION	BOTTLERS
CENTERS	BOWLING ALLEYS
HOTELS	MEAT MARKETS
TAVERNS	DELICATESSENS
FISH MARKETS	CANDY STORES
FACTORY	DRUG STORES
CAFETERIAS	

DEALERS

Ask your distributor for this great profit-maker—or write us for his name.

Distributed in many areas by
G.E. Supply Corp.

DISTRIBUTORS

Write for details of franchise for open territory.

The cost per cubic foot of usable refrigeration space in this size range is probably the lowest in the history of commercial refrigeration.

Artkraft BEV-FOOD

COMBINATION FOOD AND BEVERAGE COOLER

This self-contained "plug-in" unit engineered for outstanding performance in any type of store or institution is A MUST wherever foods or beverages are served. Can be used as both beverage cooler and food refrigerator. Has compartment for both wet or dry chilling of bottled and canned beverages. BEV-FOOD is the ONLY COMBINATION COOLER THAT CAN BE OPERATED WET OR DRY. Can be used entirely for dry refrigeration from bottom to top of each compartment. Top opening prevents spill-out of cold.

The Artkraft Manufacturing Corp.

Quality Products for a Quarter of a Century

300 KIRBY ST., LIMA, OHIO, U.S.A.

THIS COUPON FOR YOUR CONVENIENCE

THE ARTKRAFT MANUFACTURING CORPORATION
300 KIRBY ST., LIMA, OHIO, U.S.A.

- ☐ Please send more details on BEV-FOOD.
☐ Please send the name of the BEV-FOOD distributor in this territory.
☐ Please send details of distributors' franchise.

NAME.....

FIRM.....

CITY.....

IMPORTANT!

DEALERS NOTE:

This cooler is not just a beverage cooler but can be used more successfully than any other cooler in the preservation of

Hamburger—at normal temperatures for 30 days.

Sweetbreads—ten days without spoilage.

Steaks and chops—almost indefinitely.

Fish—lake and deep sea—better than ice.

Fowl—almost indefinitely.

Cream pies—For a week or more.

THERE IS NO INTERMINGLING OF FOOD ODORS



ALCO THERMO-LIMIT THE *all-purpose* VALVE

It's the only control with all these advantages "in one package":

Set it and forget it!

- ▶ LIQUID CHARGED—INSTALL IN ANY POSITION, ANY TEMPERATURE
- ▶ SEPARATE SUPERHEAT CONTROL
- ▶ SEPARATE PRESSURE LIMITING
and when necessary:
Quick Capacity Change • Easy-to-change Pressure Limit

Why carry several valves when there is a THERMO-LIMIT valve for ANY job? The Thermo-Limit will save you trouble, time and money.



Designers and Manufacturers
of Thermostatic Expansion
Valves; Evaporator Pressure
Regulators; Solenoid Valves;
Float Valves; Float Switches.

ALCO VALVE CO.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

THOUGHTS FOR MERCHANDISERS



This is the type of sincere compliment you hear in the trade...the direct result of Brunner's years of experience in application...continual advancements in design and construction.

Today, refrigeration condensing units are measured by the standards set by Brunner. Now available are models ranging from 1/4 to 25 horsepower in air or water-cooled types adaptable to just about every domestic, commercial and industrial application.

Present customers are the first to say that anyone concerned in the sale, installation or use of condensing units can ill afford to overlook the advanced features that Brunner can contribute toward dependable, economical, low-maintenance refrigeration.

For your convenience, Brunner direct factory representatives are located throughout the United States. Write us for the nearest address.

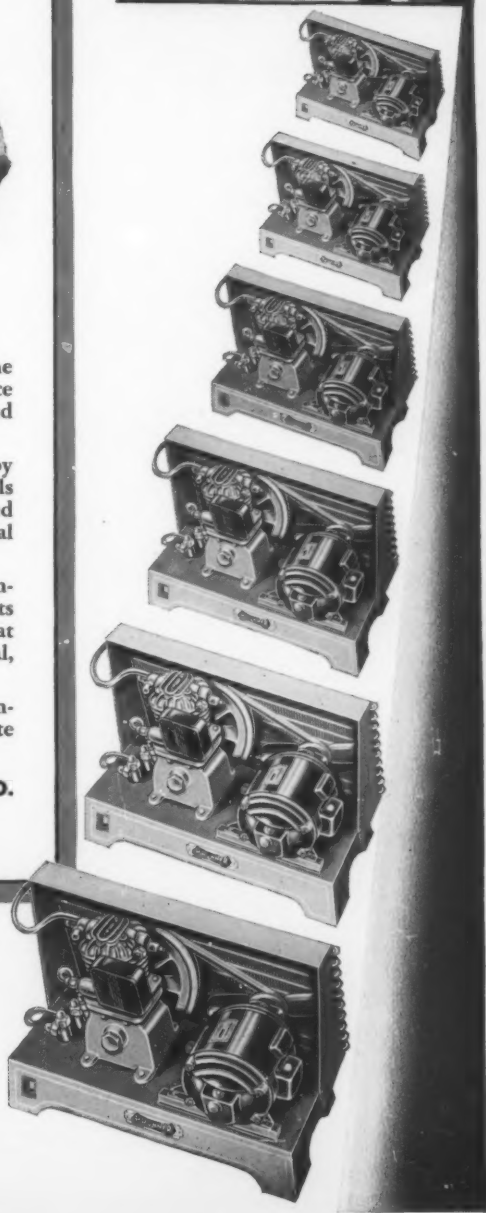
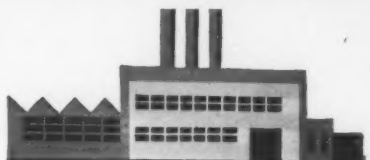
BRUNNER MANUFACTURING CO.

Utica 1, New York, U. S. A.

**AIR AND WATER COOLED MODELS
1/4 HP. TO 25 HP.**



REFRIGERATION
helps you serve better



ANSUL REFRIGERANTS • ENGINEERING

RESEARCH • FIELD SERVICE



ANSUL TECHNICAL SERVICE

• For more than 30 years the name ANSUL has been well known in the refrigeration industry... not only as a producer of high grade refrigerants... but, also, as a reliable source for authentic, up-to-the-minute technical information on refrigeration processes and problems-in-practice.

Thirty years of accumulated data, plus intensive and exhaustive research in ANSUL'S own research laboratories... covering many phases of refrigeration operations... have produced an Ansul library of technical data, unsurpassed in accuracy and scope.

ANSUL Technical Service is your "First Assistant"... the "Helping Hand" that reaches Refrigeration and Service Engineers everywhere... through ANSUL'S

world-wide wholesale organization. You are welcome to make full use of it any time without cost or obligation.

Take your problems to your wholesaler. He probably has the ANSUL technical bulletin which will answer your questions. If not, he will willingly get the information for you. He, too, wants to help make your job easier and more profitable.



ANSUL WHOLESALERS are ready and equipped to render an intelligent, co-operative service to refrigeration and service engineers on problems which arise from time-to-time in the operation of refrigerating systems.

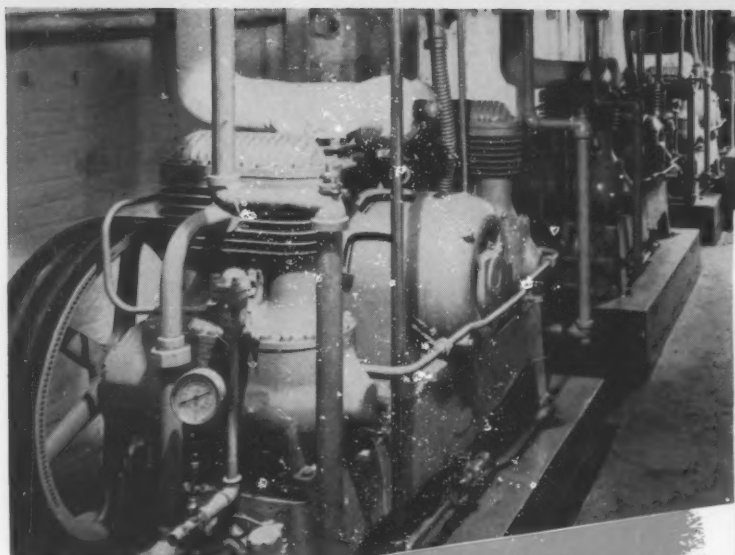


ANSUL REFRIGERANTS ARE AVAILABLE AT LEADING WHOLESALERS EVERYWHERE

ANSUL CHEMICAL COMPANY

REFRIGERATION DIVISION, MARINETTE, WISCONSIN

DISTRIBUTORS FOR KINETIC'S "FREON-11," "FREON-12," "FREON-21," "FREON-22" AND "FREON-113"



High torque of these 25 horsepower Century SCH motors easily starts these compressors.



Century 30 horsepower SC motor provides quiet operation, smooth acceleration on this air conditioning blower.

The Century Line OF Air Conditioning Motors

**Assures Quiet Starting—Smooth
Acceleration—for Refrigeration •
Pumps • Fans • Blowers • Heating Equipment**

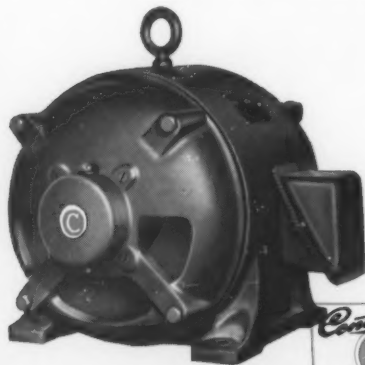
Whatever your electric motor requirements, there is a Century motor correctly engineered and properly protected to assure economical power.

For instance, Century Type SCH motors provide the high torque necessary to start heavy loads such as large refrigeration compressors. Because Century Type SC motors for blowers, fans and unit heaters start quietly and accelerate smoothly, they contribute greatly to the comfort of air heating and cooling installations.

When your applications require protection, remember that Century motors are built with splashproof, totally enclosed fan cooled and explosion proof as well as open rated drip proof frames.

Century builds a complete line of fractional and integral horsepower electric motors in the popular sizes to meet the requirements of industrial production, commercial and appliance needs.

Specify Century for all your electric power requirements.



CENTURY ELECTRIC COMPANY

1806 Pine Street, St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

NEW!

ALL THE WAY THROUGH

This Rugged American **Charging Hose**

THERE ARE ADVANTAGES all along the line in the new American Flexible Refrigeration Charging Hose. There's added strength, greater resistance to chemical attack and high pressures—yet the same flexibility for working in tight spaces.

Accurate, 1/4" SAE flared fittings are securely swaged on by a special process developed by American Metal Hose. The whole assembly is imper-

vious to moisture . . . stands up longer under the hardest use.

You can obtain this new flexible hose from your refrigeration or air conditioning supply house, in two lengths (2 ft. and 3 ft.). Each unit is individually packed. Special 6" copper tube end pieces, complete with nuts, are available separately if desired. Write for literature.

47821





American
METAL HOSE

THE AMERICAN BRASS COMPANY
American Metal Hose Branch

General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company
Throughout Canada:
THE CANADIAN FAIRBANKS-MORSE CO., LTD.,



Inner core of firmly interlocked stainless steel.

Synthetic seal covering over inner core.

Braided steel wire over synthetic covering.

Outside covering of extruded synthetic completes moisture-tight hose.

Precision machined special bronze fitting permanently attached.

A DOG'S LIFE



Not many dogs, and fewer humans, manage to enjoy life in the frigid regions around the Pole. Those whose business takes them there derive cold comfort from the piercing frost of the desolate Arctic ice-cap.

Those whose business is in the refrigeration, cold storage, or frozen food lines in these temperate parts, however, must create cold artificially . . . and, if they are wise, they safeguard it with Jamison Cold Storage Doors. The prestige of the Jamison name has been earned by half a century of satisfactory service, in all manner of cold storage installations, in all

parts of the world. In a field where failure is costly, Jamison-built Doors have consistently proved their efficiency, dependability, and economy.

Jamison, Stevenson, Victor, and NoEqual Doors, and related products, comprise the standard Jamison line . . . with special types built on order. Full information about Jamison products and the Jamison way of doing business . . . with address of nearest branch . . . will be sent upon request. Write Jamison Cold Storage Door Company, Hagerstown, Maryland.

*Branches in Principal Cities,
Coast to Coast*



JAMISON
COLD STORAGE DOORS

**Your Equipment is
NOT COMPLETE
without**



THE MIDGET PURGER

The Midget is the companion or sister product to the Little Giant Purger. The Little Giant, previously introduced, is for purging the larger units, but the Midget is a low cost, water cooled purger designed for economical operation for the smaller or fractional units up to 10 hp.

The Midget Purger provides positive and complete purging of the refrigerating system with minimum loss of refrigerant.

Purging is an operation familiar to all refrigeration men. With the standard purging facilities it is usually impossible without an appreciable loss of refrigerant.

When non-condensable gases are present in a refrigerating system, it will operate at higher pressures than if these gases were not present. Unnecessarily high pressures result in the compressor being subject to:

Higher bearing loads. Higher discharging temperatures. Increased wear on moving parts. Greater power consumption.

HERE ARE THE ADVANTAGES OF PURGING WITH THE MIDGET PURGER

THERE IS NO GUESSING—By bleeding off the gases through the purge valve until the liquid rises to the top, you have a positive indication when purging is completed.

MINIMUM REFRIGERANT LOSS—The air in the system is completely separated from the refrigerant before the purge valve is opened.

SIMPLE TO OPERATE—All operating valves easily accessible. Not necessary to check pressures or temperatures. No need to shut down the system.

POWER SAVINGS—Power savings, due to a reduction in head pressure will pay for the "MIDGET PURGER" many times over.

MANUAL OPERATION—Fully manually operated, there is no possibility of a slow leak developing which would cause a loss of refrigerant before the trouble is located.

**ORDER THROUGH
YOUR WHOLESALE**

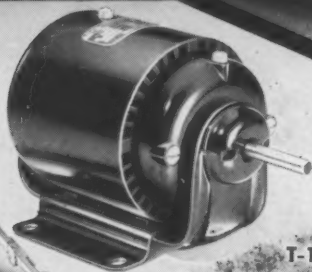
MUELLER BRASS CO.
PORT HURON, MICHIGAN

Built by SPECIALISTS

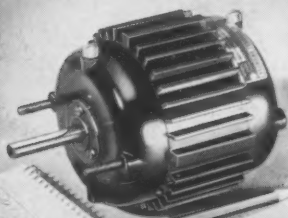
T-123



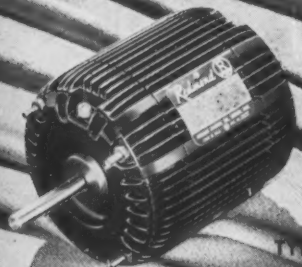
T-110



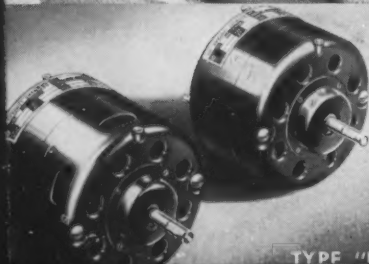
T-121



TYPE "U"



TYPE "L"



Redmond MICROMOTORS IN SIZES UP TO 1/15th HORSEPOWER

WHEN you need small electric motors, or help in adapting them to your product, get in touch with Redmond. You can work closely with the Redmond organization with your mind at ease. Redmond Company, Inc. specializes exclusively in the manufacture of Micromotors, speed controllers and small blower units — *no complete consumer products to compete with the products of customers.*

Expanded facilities. Prompt deliveries. Service before and beyond the sale. Write for complete details.

Redmond COMPANY, Inc. Main Offices: OWOSSO, MICHIGAN, U. S. A.

Reg. U. S.
Pat. Off.

THE 4-POLE SHADED POLE A. C. LINE

Type "T": enclosed models—up to 1/25th hp.

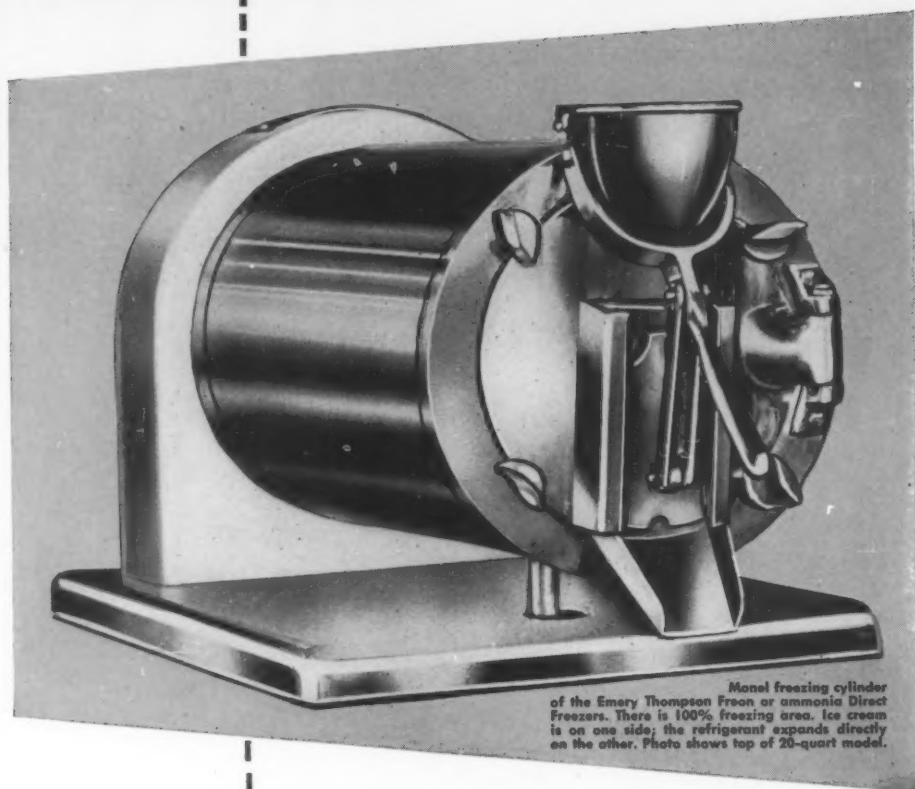
Type "U": enclosed—1/20th hp.; ventilated—1/15th hp.

Type "L": ventilated—up to 1/40th hp.

Type "L" Blowers: (not illustrated) deliver



READY, WILLING and ABLE



Monel freezing cylinder of the Emery Thompson Freon or ammonia Direct Freezers. There is 100% freezing area. Ice cream is on one side; the refrigerant expands directly on the other. Photo shows top of 20-quart model.

to protect ice cream FLAVOR and PURITY

"MONEL" freezing cylinders are a feature of EMERY THOMPSON ice cream freezers



40-quart Emery Thompson freezer. Also equipped with Monel freezing cylinder.

"ICE CREAM IS EASY TO MAKE," is a famous slogan popularized by Emery Thompson Machine & Supply Co., 1349 Inwood Ave., New York 52, N. Y.

With Monel* freezing cylinders protecting the product, E-T could just as easily add, "... AND EASY TO KEEP PURE AND FLAVORFUL."

For corrosion-resisting Monel assures complete protection of the sensitive product. Monel resists corrosion by fats, acids, alkalies. Surfaces remain smooth and unpitted... easy to keep clean and sanitary.

Its high heat transfer gives fast freezing.

No wonder Emery Thompson standardized on Monel!

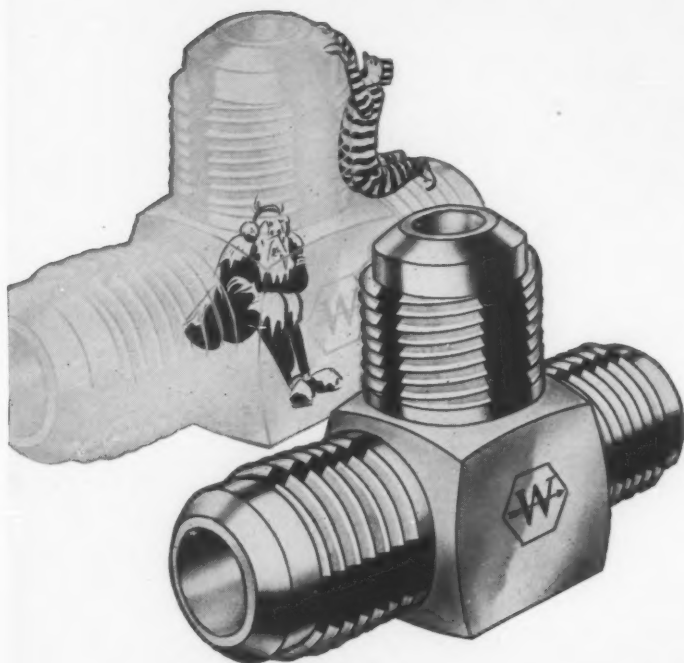
THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall St., New York 5, N. Y.



MONEL*
*Reg. U. S. Pat. Off.

Remember Monel for beauty, economy and product protection wherever food and food products are handled.

KEEP COLD IN AND TROUBLE OUT with Weatherhead refrigeration fittings



ANY refrigeration installation is only as good as its poorest fitting. To keep trouble out, use the best you can buy... Weatherhead sharp thread, precision fittings, made to S.A.E refrigeration standards in a complete range of sizes and types.

The complete Weatherhead line includes long and short forged brass flare nuts, flare to pipe connectors, double end flared unions, sealing caps and plugs and every other type of fitting you need. Name it and we make it. Rely on Weatherhead precision for fast assembly work and long trouble-free field service.

Ask for your copy of the Weatherhead Refrigeration Catalog. It's especially useful for those engaged in service and installation work.

Look Ahead with

Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO



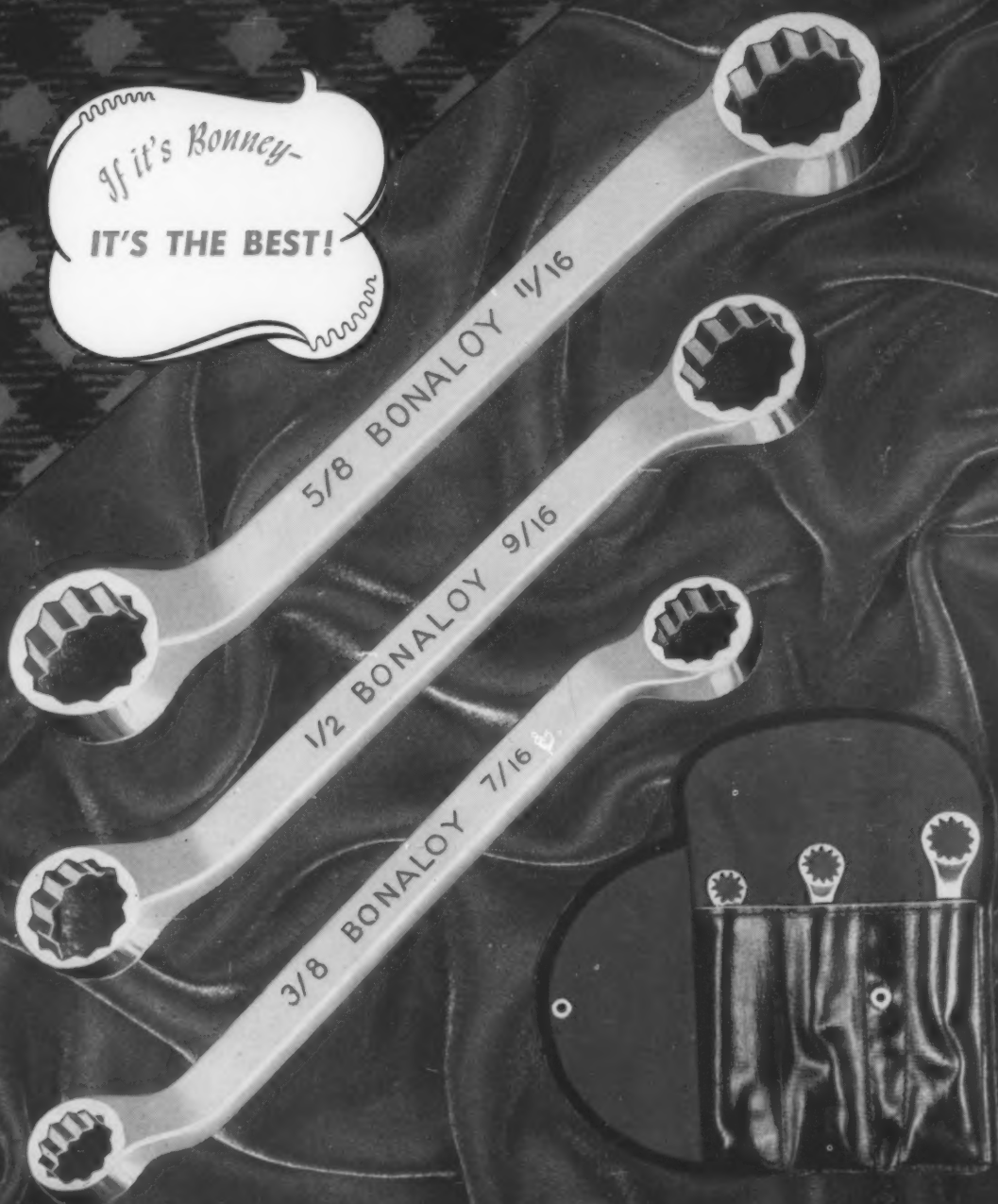
CLEVELAND • NEW YORK • DETROIT • CHICAGO • LOS ANGELES

ATTENTION REFRIGERATION ENGINEERS!

We manufacture valves, dehydrators, strainers, manifold assemblies, accessories and fittings—an extensive line of original equipment for the refrigeration industry.

If it's Bonney-

IT'S THE BEST!



Manufacturers of a complete
line of wrenches and service
tools for every use.

BONNEY
FORGE AND TOOL WORKS
ALLENTOWN - PENNSYLVANIA

In Canada: Gray-Bonney Tool
Company, Ltd., Toronto

HANDY 29-A SET -- \$2.85

These three Bonney Box Wrenches are slim, light and strong, and their six popular-size openings will handle a lot of work around the shop, plant or home. For your convenience, they are packed in a handy leatherette roll. Your Bonney jobber or distributor has these handy sets for you. See him today--and write us for your new Bonney Tool Catalog.

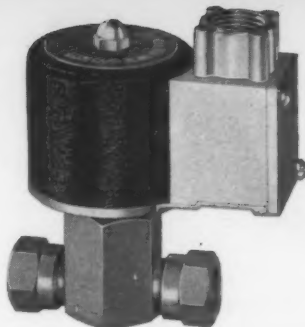


INTERNAL PARTS
OF HENRY SOLENOID
VALVES ARE MADE OF
STAINLESS STEEL.

2 Tons Freon

Brass body, renewable soft Neoprene seat. Come-apart construction with rotatable coil and aluminum junction box. $\frac{3}{8}$ " F.P.T. connection.

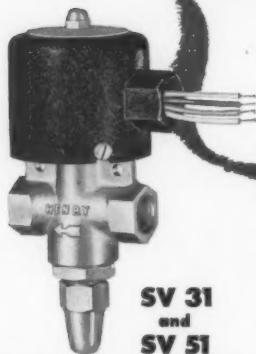
SV 21



SV 11 1 Ton Freon

Brass body, mounted in standard electrical outlet box. Easily installed. $\frac{3}{8}$ " F.P.T. connections.

Henry Solenoid Valves
choice of
refrigeration engineers who
want quiet, efficient valves
...of advanced design!



SV 31 and SV 51

3 Tons and 5 Tons Freon

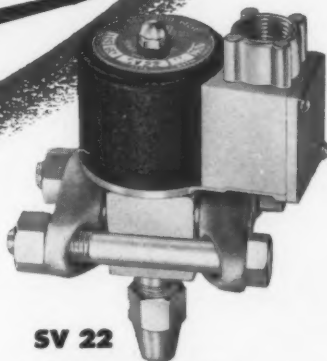
Brass body, come-apart construction with rotatable coil housing. Two piece impact plunger with direct acting metal-to-metal seat on SV 31. Neoprene seat on SV 51. Manual operating stem. $\frac{3}{8}$ " and $\frac{1}{2}$ " F.P.T. or solder connections.



SV 101 and SV 201

10 Tons and 20 Tons Freon

Brass body with flanged come-apart construction. Pilot-piston operated. Connections $\frac{3}{4}$ " F.P.T. or $\frac{7}{8}$ " O.D. solder.



SV 22

10 Tons Ammonia

Steel body with come-apart construction and hardened steel renewable seat. Aluminum junction box. Manual operating stem. $\frac{3}{8}$ " and $\frac{1}{2}$ " F.P.T. flanged connections.

SOLD BY LEADING JOBBERS

HENRY VALVE COMPANY

Control Devices, Valves, Driers, Strainers and Accessories for Refrigeration and Air Conditioning and Industrial Applications

3260 W. GRAND AVENUE • CHICAGO 51, ILLINOIS Cable: HEVALCO CHICAGO



**2 GOOD NAMES ARE
MORE PROFITABLE THAN ONE**



YOUR NAME AND REVERE DRYSEAL

REVERE advertising—on the radio, in *The Saturday Evening Post*, *Business Week*, *Fortune* and many other widely-read publications—has told your customers over and over again that the name Revere on the products you use is proof of their high quality. Thus Revere not only provides you with the finest dehydrated copper tube—dry, clean, dead soft and sealed—but backs it up with hard-hitting promotion. Your good name plus the name Revere is a sales-getting combination that's hard to beat.

Revere Dryseal Copper Refrigeration Tube is made of deoxidized copper (99.9+% pure) and is kept oxide-free by special processing methods. Each length is carefully dehydrated during manufacture, and then immediately sealed at both ends to keep out all moisture and other foreign particles. Because Revere Dryseal is dead soft, it is easy to bend and will not split when flared at the ends.

Revere Dryseal Copper Tube is made for refrigeration, air conditioning, heat control and other services.

It comes in sizes from $\frac{1}{8}$ " to $\frac{3}{4}$ " O.D., with .035" wall, and is standard in 50-foot coils.

You can get prompt delivery on Revere Dryseal from leading distributors throughout the country.

TO MANUFACTURERS—There is a Revere Distributor near you who is prepared to give you cooperative service on your needs for Revere sheet, strip, rod, bar, tube and shapes in copper, brass and bronze; and aluminum tube.

Revere's program "Exploring the Unknown" is heard on the Mutual network Sunday evenings from 9:00 to 9:30 E.D.S.T.

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.;
New Bedford, Mass.; Rome, N. Y.

Sales Offices in Principal Cities, Distributors Everywhere.

THE REFRIGERATION INDUSTRY

You Should Have a Copy!

PREST-O-WELD
OXY ACETYLENE WELDING
AND CUTTING EQUIPMENT
CATALOG

THE LINDE AIR PRODUCTS COMPANY
210 E. 42nd St., New York 17, N. Y. • 1944
Offices in Other Principal Cities
In Canada: Dominion Oxygen Company, Limited, Toronto

PUROX
OXY ACETYLENE WELDING
AND CUTTING EQUIPMENT
CATALOG

THE LINDE AIR PRODUCTS COMPANY
210 E. 42nd St., New York 17, N. Y. • 1944
Offices in Other Principal Cities
In Canada: Dominion Oxygen Company, Limited, Toronto

COMBINATION WELDING AND CUTTING EQUIPMENT

Oxweld
WELDING ROD AND SUPPLIES
Price Subject to Change Without Notice

Here are the latest catalogs showing Linde's two outstanding lines of oxy-acetylene welding and cutting equipment available from jobbers everywhere. Each catalog has thirty pages . . . full color illustrations . . . all arranged for easy selection and ordering of just the equipment you need for your work. Ask your jobber or write direct to Linde for a copy of the PUROX or PREST-O-WELD catalog.

The words "Oxweld," "Prest-O-Weld," and "Purox" are registered trademarks of Union Carbide and Carbon Corporation.

You also should have a copy of the Oxweld Welding Rods and Supply Price List. Ask for it, too.

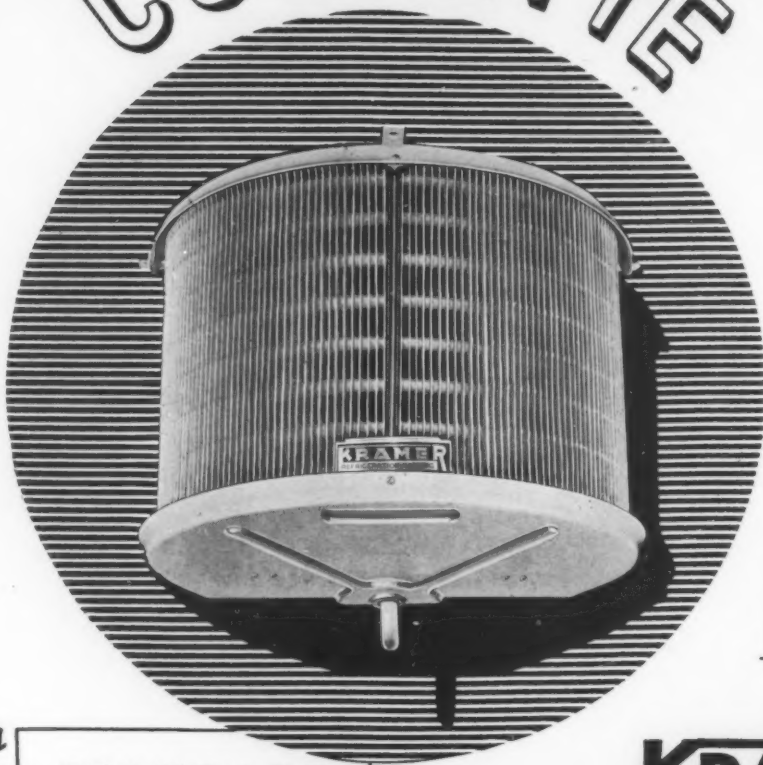
THE LINDE AIR PRODUCTS COMPANY

UNIT OF UNION CARBIDE AND CARBON CORPORATION

30 EAST 42nd STREET • NEW YORK 17 • N. Y. **UIC** OFFICES IN OTHER PRINCIPAL CITIES

IN CANADA: DOMINION OXYGEN COMPANY, LIMITED, TORONTO

CURVETTE



*Two
Types*

**STANDARD
MODEL**

for

NORMAL TEMPERATURES
+34° to +50°

WRITE FOR
BULLETINS R106 and R123

**THERMOBANK
MODEL**

for

FREEZING TEMPERATURES
+34° to Minus 20°

by

KRAMER

KRAMER TRENTON CO. *Trenton, N. J.*

MILES AND MILES OF TUBING INTO FITTINGS

Nibcoloy fittings

**NORTHERN INDIANA BRASS COMPANY
ELKHART, INDIANA**

Please send Catalog No. 901 NIBCOLOY Wrot Fittings line in Nickel, Inconel, Monel, and 316, 347, and 304 Stainless Steel. Or Catalog 8 line Wrot Copper Fittings and Valves. Check for either one desired.

NAME _____

FIRM _____

STREET _____

CITY _____

STATE _____

FOR CORROSION resisting metals . . . Copper, Monel, Inconel, Nickel, or Stainless Steel 316, 347, 304. Use economical light gauge tubes with tubular fittings by NIBCO. Less turbulence because core diameter is continuous through fitting. Metallurgical specifications precisely the same for both tubes and fittings. Use the coupon below to secure more information.

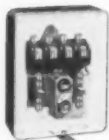
SEND FOR CATALOG AND PRICES TODAY!

Bulletin 609
MANUAL STARTER

Bulletin 709
AUTOMATIC STARTER

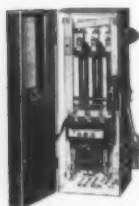
One-Ton Vilter
PaKlcer with
Allen - Bradley
Motor Controls.

SOLVE YOUR *Control Problems* with these Allen-Bradley Standard Units



MANUAL ACROSS-THE-LINE

Manual a-c motor starters for air-conditioning and refrigeration installations not requiring automatic remote control. Enclosures are available for every purpose.



VELVET-SMOOTH STARTERS

For starting large compressors without lamp flicker. Have graphite compression starting resistors which provide stepless control of starting current. Large motors are accelerated manually or automatically . . . without jerks . . . up to full speed.



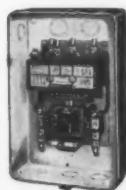
TEMPERATURE CONTROLS

Accurate, dependable, trouble-free temperature controls for wide variety of refrigeration applications. Send for bulletin.

Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wis.

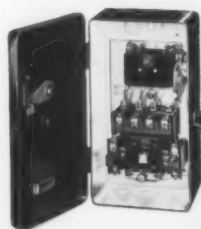
AUTOMATIC ACROSS-THE-LINE

For motorized machines with automatic temperature and pressure controls. Simple solenoid switch—no contact maintenance—good for millions of trouble-free operations.



COMBINATION STARTERS

Have disconnect unit and starting switch in one cabinet. Save space—labor—materials—money. Make neater installations. Fuses optional. Available in variety of enclosures for all service conditions.



PRESSURE CONTROLS

Accurate controls for every air-conditioning and refrigeration need. Wide variety of types and ranges. Send for bulletin.



ALLEN-BRADLEY

MOTOR CONTROL

QUALITY

Nearly everybody buys reach-ins



THE "big brother" of the household refrigerator leads all other store fixtures in dollar sales. It is a volume builder for every aggressive dealer.

In the long list of commercial food handlers it is hard to find a name that doesn't use at least one of these versatile fixtures ranging from seventeen to a hundred cubic feet in capacity. With modification, they also serve bakers... florists... drug wholesalers.

The alert dealer will be sure he has a "hot" line of reach-ins, with a good range of sizes, and adaptable to all the different markets this product serves.

Thousands of satisfied users, in this country and

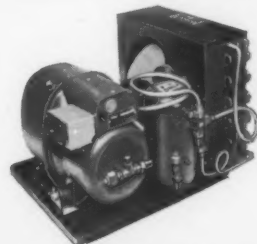
abroad, testify to the economy and dependability of Servel Supermetic on reach-in refrigerators. Because they are so compact, Servel Supermetics save valuable space in self-contained work. Their reserve capacity insures safe temperatures even when the product and service loads are high.

Servel fractional horsepower Supermetics have no belts, seals, or gasketed joints. That means higher efficiency and less interruption for service work.

If you're not now using Servel Supermetic on your reach-in sales, just try one the next time you have a tough job or a critical customer.



Reach-in Refrigerator illustrated is Model RW-7, by courtesy of Fogel Refrigerator Company, Eadom and Kennedy Streets, Philadelphia, Pennsylvania. The Electric Refrigeration Division of Servel, Inc., manufactures condensing units only. These are available through prominent distributors and fixture manufacturers in all sections of the country.



Servel Supermetic Model H2B is popular for large reach-in applications. Four other medium-temperature models available in fractional HP sizes.

Servel Inc.
ELECTRIC REFRIGERATION DIVISION, EVANSVILLE 20, INDIANA

This is Number Eight in a series of advertisements featuring the markets available to the alert dealer in the commercial refrigeration industry. Ask for reprints for use in training your salesmen to take full advantage of all commercial refrigeration markets.



NEW ORLEANS INVITES THE REFRIGERATION INDUSTRIES



A NEW ORLEANS LOCATION MAKES SENSE...and PROFITS!



TRADE FACILITIES...unequalled. New Orleans International House (above) and International Trade Mart aid in your buying-and-selling with Latin America and the world. The new Foreign Trade Zone (below) gives you competitive advantages in manufacturing, exporting, and importing.



HERE ARE MARKETS... Local and foreign—easily reached from strategically located New Orleans: 150,000,000 buy-minded Central and South Americans, many of whom live in tropical and sub-tropical regions—our own rich, 22-state Mid-Continent area—the 10 southern states which contain 23% of the nation's population and produce less than 3% of the refrigerators manufactured in the United States.

HERE ARE RESOURCES... Raw materials in abundance are available near New Orleans. Also, sheet steel and rolled shapes may be shipped inexpensively by barge from Birmingham, electric motors from Ohio and Illinois. Castings of all types, sizes and shapes are made by experienced foundries in this area. Unlimited low cost natural gas for enameling ovens; ample supplies of economical electric power.

HERE IS TRANSPORTATION... New Orleans' coordinated facilities are the finest: modern, sheltered harbor, 97 ship and barge lines, 8 major air lines, 9 trunk line railroads, well-kept highways, and connected with the 13,000 mile network of inland waterways. All these favorable factors are supplemented by a plentiful, cooperative supply of *Skilled Labor*, which has more than doubled since 1940, and *Friendly Taxation*, local and state, which helps encourage industrial growth.

SEND FOR A FREE COPY

... of our recently completed study, "The Opportunity for the Manufacture of AIR CONDITIONING and REFRIGERATION EQUIPMENT in the city of New Orleans, giving more detailed information of the profitable possibilities of a New Orleans location. Address:



GREATER NEW ORLEANS, INC.,
1024 Mulsan Blanche Building,
New Orleans 16, Louisiana.

GREATER NEW ORLEANS





***made with CHASE
wrought copper fittings**

CHASE fittings for Refrigerator Tube fit the tube *accurately* . . . no inside ridges to hamper free flow of refrigerants.

Made of *wrought* copper, Chase Fittings are sound, non-porous. Refrigerant gases cannot penetrate or permeate them. Soldered to Chase Extra Soft Tube, they form a tight, leak-proof joint.

And . . . Chase Wrought Copper Fittings expand and contract in exactly the same ratio as the tube. They are not affected by ordinary vibration or pressure. The joint *stays tight!*

Ask your distributor for Chase Wrought Copper Fittings and Chase Extra Soft Copper Refrigerator Tube. That's the combination for better, longer-lasting connections.



**CHASE Extra Soft Copper Tube
in an Extra-Handy package**

Chase Copper Refrigerator Tube is *extra soft* for easy bending. Positive end seal fits anywhere the tube will fit—need not be removed till you're ready to make connections.

Space-saving package is plainly labeled with full specifications—can be reused to protect and identify cut coils. Tube sizes: $\frac{1}{8}$ " to $\frac{3}{4}$ " diameters, 50' and 100' lengths.

Chase  **the Nation's Headquarters for
BRASS & COPPER**

WATERBURY 91, CONNECTICUT

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK . . . handiest way to buy brass

ALBANY ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS
NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER SAN FRANCISCO SEATTLE ST. LOUIS WASHINGTON (Indicates Sales Office Only)



Conventioners Don't Get "Hot Under the Collar!"

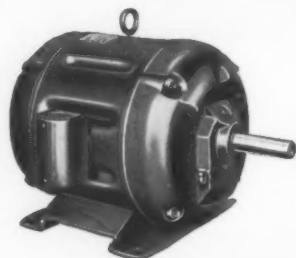
WAGNER *Quality* **MOTORS** help keep them cool...

In St. Louis, one of the nation's "hot spots", delegates and guests of the many conventions held in the Municipal Auditorium are kept comfortably cool by an efficient air conditioning system. Among the factors contributing to the efficiency of the system are the motors that drive the air conditioning equipment.

Air Conditioning engineers know that the dependability of Wagner Motors help their installations operate with less danger of breakdowns. That's why hundreds of manufacturers of air conditioning, heating and ventilating equipment have standard-

ized on Wagner Motors. Wagner can help you, too. If you manufacture or use motor-driven equipment, it will pay you to choose Wagner Motors. Users of Wagner Motors also profit by the quick, convenient, nationwide service facilities provided by Wagner.

Twenty-nine branch offices, located in principal cities, are ready to assist you, without obligation, whenever you have a motor problem. Write for Bulletin MU-185 for information on the complete line of Wagner Quality Motors. Address Wagner Electric Corporation, 6442 Plymouth Avenue, St. Louis 14, Mo.



Regardless of what your motor requirements may be—large motors ... small motors ... Wagner makes them all. The motor illustrated is typical of the Wagner line of poly-phase and single-phase motors. Choose a Wagner motor for your next installation.

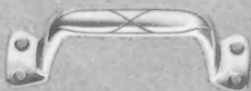
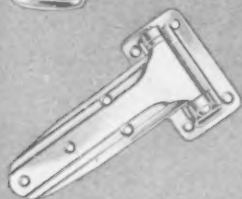
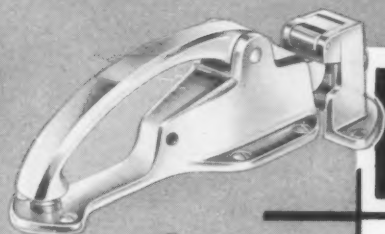
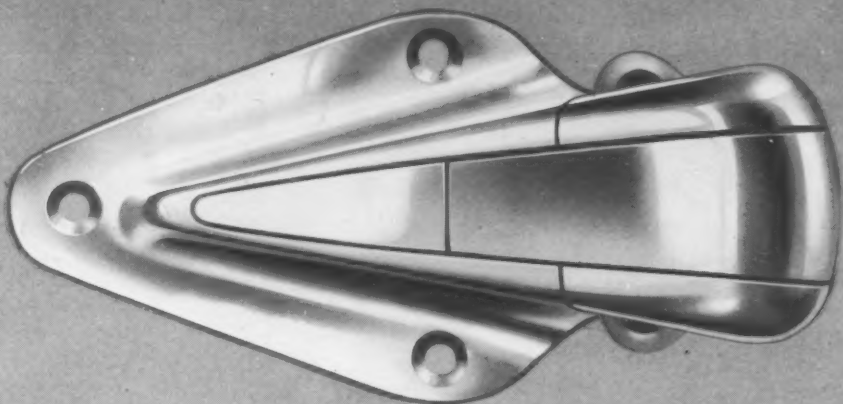


M47-24

Consult Wagner Engineers on all Electric Motor Problems



• ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE PRODUCTS •



SMOOTH WORKERS

Two things you demand of hardware fittings on refrigeration units — that they work right and look right.

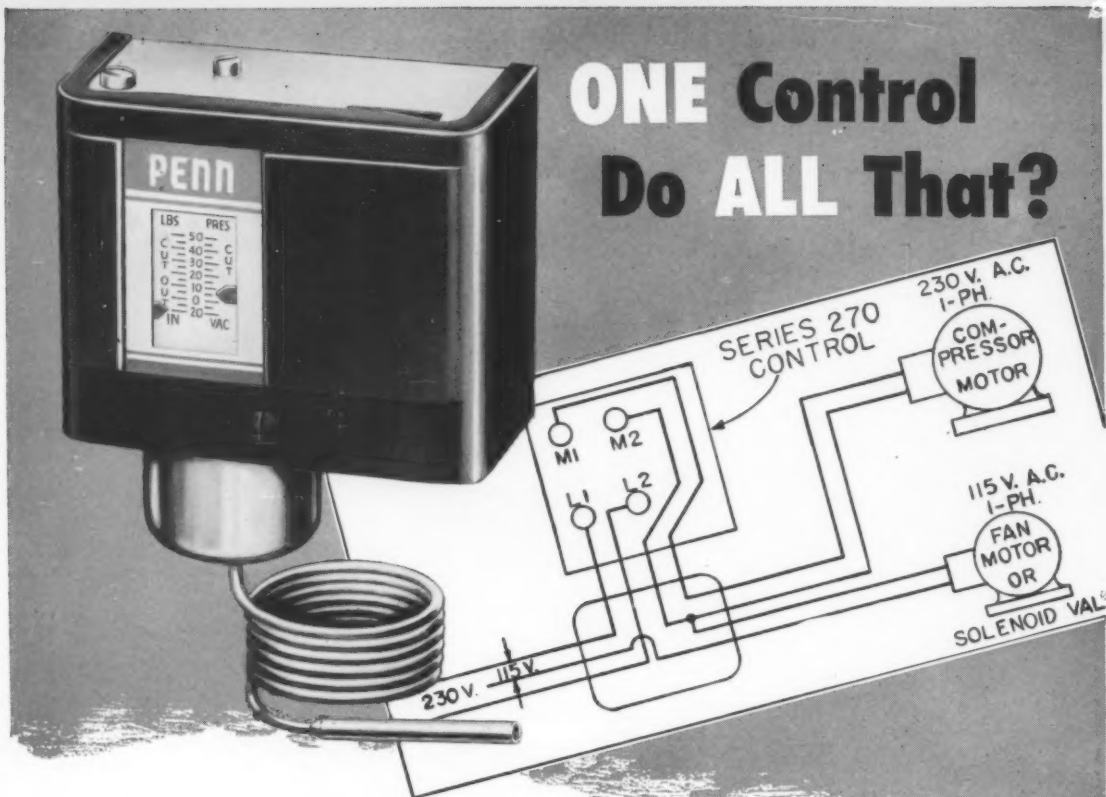
Arcade hardware is a simple, smooth working answer to both needs.

Catalog and prices on request.

ARCADE

MANUFACTURING DIVISION
ROCKWELL MANUFACTURING COMPANY
FREEPORT, ILLINOIS





Series 270 and 272 PENN "Single" Temperature or low side pressure controls. Also (not shown) Series 271 and 273 PENN "Dual" Controls which combine in one unit a temperature or low side pressure actuated mechanism and built-in high pressure safety cut-out.

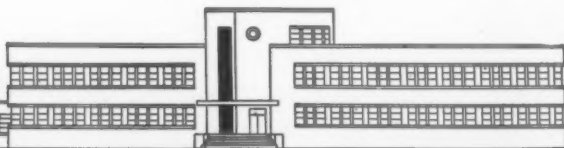
Yes, there's practically no limit to the versatility of the PENN 270 Series Control—the *first and only* control that features a load-carrying, 2-pole switch.

It's efficient and practical in all types of conventional refrigeration and air conditioning jobs as well as many unusual applications not possible with ordinary single pole controls. The diagram above shows a suggested hookup for a 3-wire, 115 and 230 volt AC system. This installation, for example, might be a 230 volt AC single phase compressor motor and a 115 volt AC single phase fan motor, solenoid valve or other device to be operated simultaneously.

The PENN 270 Series also can be used to control simultaneously the operation of two single phase AC or DC motors. It can control poly-phase motors of 3 h.p. or under without line starters (where protection against single phasing is provided). It is a better and more economical method of controlling multiple refrigeration systems.

Learn more about this new, different and better control. Write **Penn Electric Switch Co., Goshen, Indiana.** In Canada: Penn Controls, Ltd., Toronto, Ontario. *Export Division: 13 E. 40th Street, New York 16, U. S. A.*

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

BTU

News • Laws • Trends

● **Would You Like to See Samoa?** Well, maybe not Samoa, but if you've a hankering for foreign travel here's a chance to do it and be paid for it, too. The War Department's chief of engineers has announced an immediate need for trained refrigeration, air conditioning and heating engineers for overseas duty. Among the overseas stations listed are Guam, Philippine Islands, Okinawa, Japan, Korea, and the Caribbean area. Salaries range from \$3,306 to \$8,875 per year. Applications should be made to Civilian Personnel Branch, Office of the Chief of Engineers, Building T-7, Gravelly Point, Va., and should include completed Form 37, U. S. Civil Service Commission, in duplicate, copies of which are obtainable at any post office.

● **"Task Force Furnace."** If the U. S. Army has its way, the tank driver of the future will bounce around in much more comfortable surroundings than has been the case up to now. The sweltering tankmen will be kept cool by a current of air passing through excelsior dampened by a stream of water within the container. Air is circulated by a fan attached to the engine. This innovation is being tested at an Army camp outside of Yuma, Ariz. The operation, known as "Task Force Furnace," is investigating how military materiel and men will hold up under a tropical sun.

● **Jahco Sealed Units Coming.** Jack & Heintz Precision Industries, Inc. reportedly was starting production of its hermetically-sealed compressor last month. Pilot runs on the units were completed recently, and models assigned to selected manufacturers for test runs in commercial and industrial refrigeration products. Jahco open-type unit production was expected to approach 6,000 units in August, and fractional motors are being turned out at a 4,500-per-day clip, with production geared to hit 6,000 daily by October.

● **Biggest Heat Pump Job.** Worthington Pump & Machinery Corp. has been awarded a contract to supply reverse cycle refrigerating equipment to heat and cool the new newspaper building of the Portland (Ore.) *Oregonian*. According to Worthington officials, this will be the largest heat pump installation in the country.

● **New Law to Aid Sales.** A lucrative field for the sale of refrigeration equipment in New York as a result of a new state law requiring dispensing of milk in eating places in half-pint containers, either bottle or paper. The law prohibits the use of siphon dispensers or the lading of milk from a large container or can. It is designed to protect the public from a sanitation standpoint, as well as to assure that whole milk is dispensed. It is expected to take some time before necessary refrigeration equipment is acquired by dealers to handle the milk in containers.

● **More Freon Seen for 1948.** Kinetic Chemicals, Inc., reportedly is installing equipment at East Chicago, Ind. for the manufacture of Freon refrigerants which will increase Kinetic's production 75 per cent. The added facilities are scheduled for production in the spring of 1948 and are expected to relieve the continuing shortage of Freon.

● **"Slots" are Big Business.** The National Automatic Merchandising Association calculates that 1946 vending machine sales of beverages amounted to \$52 million. Cigarettes, with \$300 million, continue to be the big "slot" item, but the 1946 total for beverages (all requiring refrigeration) points this field up as a potential challenger for top money if present trends in that direction continue.

● **There'll Be a Banquet.** F. J. Hood, chairman of the Fifth All-Industry Show committee, has announced that there will be an all-industry banquet in the Cleveland Auditorium on one of the four nights of the Exposition next January. No definite date has been announced, but it is likely that the affair will be held either Jan. 27, or 28, since the Show closes at 6 p.m. on those nights.

● **He Wasn't "Struck Out".** When the recent transportation strike halted all public transportation in St. Louis, one appliance dealer wasn't "struck out." Using its salesmen and store employees as a "taxi service," the dealer operated a pick-up and delivery service for any prospect who called the store between 8:30 a.m. and 3 p.m. He got some nice extra business out of the idea.

● **Farmers Own Biggest Industry.** Value of land, buildings, crops on hand, livestock, machinery and other equipment owned by 5,800,000 independent American farmers has passed the \$90 billion mark, making theirs the biggest private industry in the world, according to recent figures from the Bureau of Agricultural Economics. The output of this group in 1946 exceeded \$25 billion as against \$5 billion for the steel industry and \$3,200,000,000 for the automotive industry. Anybody want to argue that farms aren't a No. 1 prospect for refrigeration equipment?

THERE'S MONEY IN MARINE REFRIGERATION

Shipboard refrigeration of all types represents a vast and varied opportunity for sales and service firms in seaboard cities. Here's a survey of some of the equipment and problems involved in two types of marine applications

By Donald F. Daly



The "Marine Snapper" is a typical example of a modern refrigerated cargo ship. It is equipped to carry virtually any type of load.

IF YOU don't live in one of our many seaports where oceangoing vessels come in for repairs, it is likely that you have no conception of the magnitude of marine refrigeration.

Before the war our merchant marine fleet was small in comparison with those of many other nations, but during the war our country embarked on one of the greatest shipbuilding

programs the world has ever known. From all indications, it appears that the United States will dominate the world in merchant shipping for many years to come.

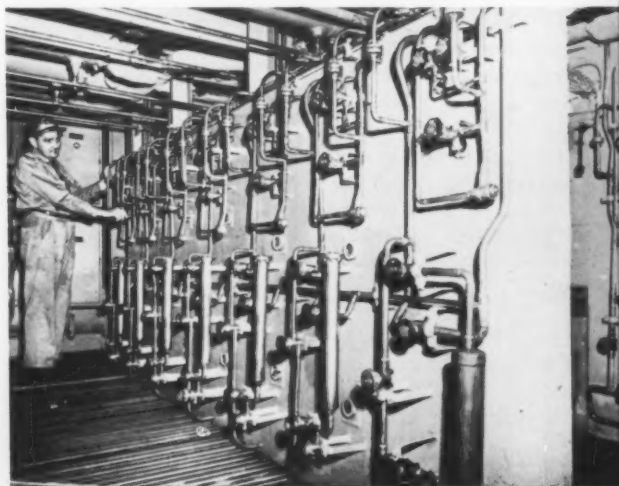
The field of marine refrigeration is so great and so complex that it would take several books to tell the whole story. Obviously everything cannot be covered in one short article, but this presentation of facts and photographs of two of the most important forms of marine refrigeration—cargo vessels and fish boats—will give some idea of what goes on in this field and what opportunities exist for sales and service firms.

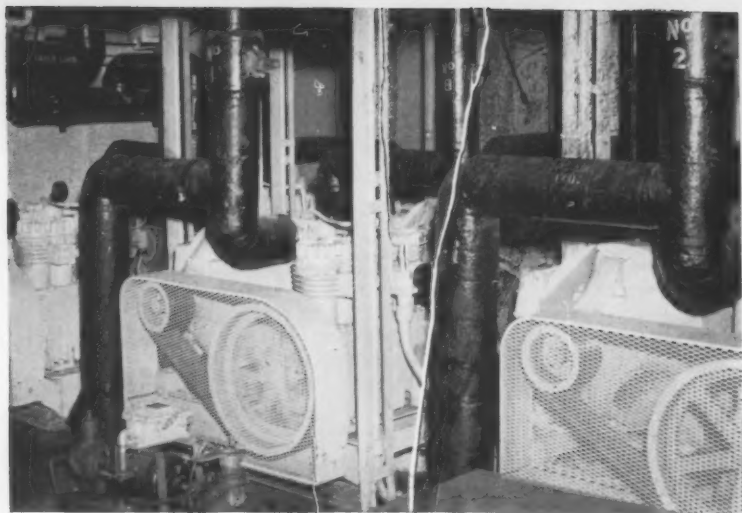
Main control panel for the vessel's cooling system includes nine sets of high and low pressure cut-out gauges and switches.

On shipboard space is at a premium and none can be wasted. As an example, consider the refrigeration installation on a C4 type cargo vessel such as the "Marine Snapper". All of the machinery for this ship's cargo refrigeration is located in a room 24 feet long by 20 feet wide. There are nine condensing units in all—six 15 hp and three 10 hp Carrier units. Every inch of the floors, walls, and ceilings, is taken up by some piece of equipment.

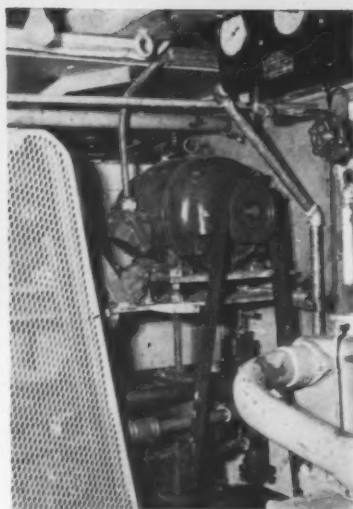
One whole side of the room is taken

Freon distribution manifolds in the compressor room. Receivers are located behind the screen bulkhead. Sight glasses are visible.





Three of the nine Carrier condensing units used in this plant. All of this equipment is in a room 24 feet long and 20 feet wide.



Fish boats present a somewhat different problem. This 3 x 3 Creamery Package unit cools the hold of a small fishing vessel.

up by the eighteen motor controllers. The other walls are taken up by the receivers, refrigerant distribution manifolds, and the cross-connection piping. The ceiling is completely covered by the nine water cooled condensers, water piping, and water regulating valves. All condensing units pull on a load and there is no standby unit, but the piping is so arranged that any unit can pull on any load.

The motors are direct and have variable speed rheostats so they can be operated at any speed from 1100 rpm to 1800 rpm. In addition to the conventional wall-mounted starter switch for each motor, which can be set for either hand or automatic operation, there is a push-button control on each motor base that will stop the motor, run it on automatic, or run it on hand control. The controls for the blower coil motors, the air circulation fans, the condenser water pump, and the defrost water pump, are in this room, too.

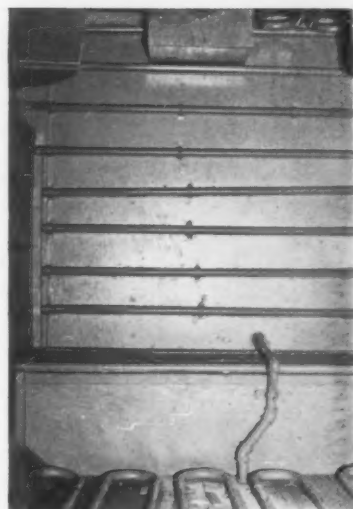
The high and low pressure controls for each unit are mounted on a control panel board. So, too, are the high and low pressure gauges for each unit. Just to the right of this main control panel is an electrical indicating thermometer. By means of this instrument the operator can take a temperature reading of any or all of the refrigerated rooms without having the machinery room. In the rooms that are cooled by pipe coils the readings are taken in the conventional manner of any remote-reading ther-

mometer. For the rooms cooled by blower coils the temperature is taken at two places—the air entering the blower and the air leaving the blower.

Just above this instrument is the safety alarm signal which is standard equipment on all large installations, and precludes the possibility of anyone being locked in the boxes. Another device which saves the operator a lot of steps is the tell-tale bulls eye panel for the lighting system. Every lighting fixture in the refrigerated rooms is brought into this panel and can be shut off in the machinery room. The operator can also check any unauthorized entry into the boxes in this manner.

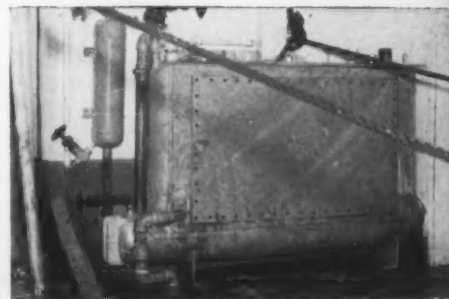
The plant is protected by every known safety device. There is a conventional spring-operated relief valve in the discharge line from each compressor which by-passes the refrigerant to the suction side in case of excessive pressure. There is another spring operated relief valve, set to open at 200 pounds, on the liquid line from each receiver. In addition there is a rupture disc on the top of each receiver that will burst at 250 pounds pressure. The discharge from the relief valves on the receivers is all tied into an overboard line which vents the refrigerant to atmosphere in case of excessive pressure. This feature is very necessary because the entire plant holds more than 3000 pounds of Freon-12. If there should be a fire in the machinery room, or in one of

Continued on page 64



Coil installation in hold of a small fish boat. No insulation is used, so coils must be placed on top, bottom, and all sides.

Condenser for this fish boat system is set on weather deck for lack of space in engine room. Salt water is used for cooling.





The Grand Canyon of the Colorado River, in northern Arizona, is the greatest canyon on earth—200 miles long, eight to ten miles wide, more than a mile deep in many places. The bared rocks, in their riot of reds, buffs, greens, and white, represent geologic time from the oldest known to the present day. Discovered by Cardenas in 1541, it has been a National Park since 1919, a tourist magnet of great importance—and rightly called "the most sublime spectacle in the world."

*
A favorite adjective employed by users to describe their Mills Condensing Units.

Mills Condensing Units

Products of Mills Industries, Incorporated
4100 Fullerton Avenue, Chicago 39, Illinois



AIR DISTRIBUTION in AIR CONDITIONING

Air distribution can make or break an air conditioning system. Here is a discussion of some of the problems involved

By Leonard R. Phillips

Consulting Engineer

Air is distributed throughout this control room of radio station WFBR, Baltimore, by the Anemostat air diffuser in the ceiling.

AIR CONDITIONING engineers and contractors need more than an elementary knowledge of air distribution, because air distribution can *make or break* air conditioning.

If devices for this purpose are properly selected, conditioned air is distributed in a manner that meets the most exacting specifications for interior climate control. On the other hand, improper selection often leads to severe drafts, unequalized temperatures, poor humidity control, air stratification, stale air pockets, and other objectionable conditions.

This is true because the size of the air duct is limited. If an air duct as

large as a whole wall of a room were practical, proper air-distribution would present no problem. Since such a large duct is impractical, air velocity must be increased so that a smaller duct can handle an adequate volume.

For cooling, temperature of air in the duct must then be sharply lowered so that incoming air will establish the desired overall room temperature when mixed with the warmer room air.

When cold, high-velocity air leaves the small duct through an improperly selected fixture, it usually sweeps to the occupancy zone of the room before mixing with warmer room air, and before its velocity is appreciably reduced by entrainment of room air.

Such unsatisfactory conditions can be avoided only by reducing incoming air velocity at duct openings. Then the cooled incoming air and the warmer room air can be mixed well above occupancy level before the mixture is distributed in a controlled, draftless pattern.

This means more than merely supplying the required volume of properly conditioned air, for if the air circulates improperly—even after it leaves the ducts—complaints will follow.

Such complaints may seem unwarranted when thermostats and other standard instruments of the system

Three types of Anemostat air diffusers. Left—Type AC, the only Anemostat combining supply and exhaust. Center—Type W, for wall mounting. Right—Type B, for general use in residential and commercial applications.

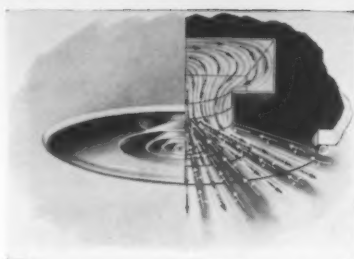


indicate that everything is operating properly. However, if complaints are numerous or if an industrial process is affected a check should be made.

Often an ordinary thermometer and a psychrometer for humidity measurements will show that the complaints are justified. By taking readings at various points about the room, from the floor to the ceiling, the engineer will often find wide temperature differentials.

If both temperature and humidity are unequalized to any extent, undoubtedly there will be a wide variance in air velocities throughout the conditioned enclosure. An engineer can convince himself of this simply by noting how the air movement affects a match flame, tobacco smoke, or cotton fluff.

An accurate test may then be made with a thermo-anemometer (thermometer



How Anemostat air diffuser works. Metal cones are designed so that air from ducts (black arrows) siphons counter-currents of room air (white arrows) back into cones. These two air streams then are pre-mixed within the diffuser before recirculation.

eter anemometer). A Kata-thermometer may be used for the same purpose. However, it is cumbersome and requires more time to operate.

If the previously mentioned tests indicate that air is being improperly

distributed throughout the enclosure, often the fault can be found at the air-duct openings.

In a shipping room of one mid-western plant, for example, blasts of cold air from two unit coolers were so severe that employees could not endure room temperature of 50 F, even though lower temperatures were essential to proper plant operation. When conventional horizontal grilles on the unit coolers were replaced by scientifically designed air diffusers, the unsatisfactory conditions were immediately eliminated.

In another plant the air-conditioning system failed to maintain the temperature and humidity required for the manufacturing process. A study showed that air was being improperly distributed after leaving the ducts. When efficient air-diffusers were used

Continued on page 70

Various factors to be considered in selecting proper Anemostat air-diffusers for stationary installations

ANEMOSTAT TYPES												
FACTOR	DETAIL	AC	AR	B	C	CM	CCM	CSL	NL	HU-3	HU-4	W
DESIGN	No. of (Members, Cones)	6	6	5	5	4	3	5	3 (40-4)	3	4	7 (+5-5)
	Flush Design	X	O	O	X	X	O	X	O	O	O	X
	Projecting Design	O	X	X	O	O	X	O	X	X	X	O
SIZES AVAILABLE	Size -	10 to 60	15 to 130	10 to 95	10 to 95	5 to 30	7.5 to 75	20 to 95	15 to 40	25 to 75, 75S	25 to 75, 75S	5 to 40
FUNCTION	Supply Only	O	X	X	X	X	X	X	X	X	X	X
	Supply and Exhaust	X	O	O	O	O	O	O	O	O	O	O
ASPIRATION %		30%	30%	35%	35%	30%	25%	35%	30%	A	A	35%
APPLICATION	Comfort	X	X	X	X	X	X	X	X	HO	HO	X
	Commercial	X	X	X	X	X	X	X	X	HO	HO	X
	Industrial	HO	X	X	HO	X	X	O	O	X	X	X
ANTI-SMUDGING		O	O	O	X	O	X	O	O	O	O	X
PERFORMANCE	Heating	HO	X	X	X	X	X	X	HO	X	X	X
	Cooling	X	X	X	X	X	X	X	X	O	O	X
	Ventilating	X	X	X	X	X	X	X	X	HO	HO	X
	Refrigeration	HO	X	X	HO	HO	O	O	O	O	O	HO
MAX. MOUNTING HT.		14'	No Definite Limit, Consult HO for Extreme Heights							20'	40'	20'
EQUALIZING FEATURE	E. D.	O	X	X	X	X	X	X	C	HO	HO	D
	A. E. D.	X	O	O	O	O	O	O	O	O	O	O
	R. D.	O	O	O	O	O	O	O	O	X	X	O
VOLUME CONTROL	S. D.	O	X	X	X	X	X	X	X	E	E	Special
MAY BE COMBINED WITH	Drop Light Fixture	X	X	X	X	X	X	HO	O	E	E	O
	Direct Center Light	O	O	O	"CRL"	"CRL"	O	O	X	O	O	O
	Indirect Cove Light	O	HO	HO	"CSL"	O	O	X	O	O	O	O
	Projection Unit Heaters	O	O	O	O	O	O	O	O	X	X	O
INSTALLATION	Flush to Ceiling	X	X	X	X	X	X	O	X	HO	HO	F
	Exposed Ductwork	X	X	X	O	X	X	X	O	X	X	X
		"AC"	"AR"	"B"	"C"	"CM"	"CCM"	"CSL"	"NL"	"HU-3"	"HU-4"	"W"
		Only Supply Exhaust Type Anemostat Air Diffuser	Especially Useful for High Rates of Air Change and Temperature Differentials	General Application under Practically All Conditions	For Flush to Ceiling Jobs Only: Anti-Smudging	O.K. for Stationary Jobs That Designed for Transport Usage	Low Price Unit for General Usage	Cove Light Combination Only Where Special Lighting Effect Desired	Special Lighting Combination	Mostly Recommended in Combination with Vertical Projection Unit Heaters		Only Sidewall Anemostat Air Diffuser

THE SELECTION OF AIR DIFFUSERS

TYPICAL STEPS IN SELECTING

From data prepared by
LEONARD R. PHILLIPS, Consulting Engineer

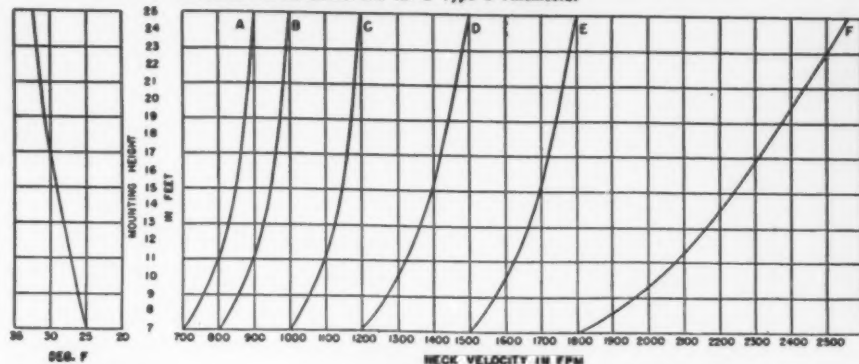
Supposing that by examining the features of the principal types, an architect finds Type B most suitable for a 60 x 120-ft department store with a 20-ft ceiling. He divides the plan into two 60-ft squares and centers an Anemostat in each square.

Next he must determine the total air supply in cfm. This is simple: volume of the room, times air changes per hour, divided by 60.

For this illustration, assume that a little better than 4 air changes per hour are required. Then, 10,000 cfm is required for the entire room. One diffuser will then handle half the volume, or 5,000.

The architect must next know the suggested neck velocity for a Type B diffuser in a department store with a 20-ft ceiling. The graph (Fig. 1) shows this to be about 1800 fpm.

FIG. 1: Recommended velocities for neck of diffuser will depend on conditions and type selected. These curves are for a Type B Anemostat



RECOMMENDED
MAXIMUM COOLING
TEMPERATURE DIFFERENTIAL FOR THE
VARIOUS MOUNTING
HEIGHTS.

RECOMMENDED
MAXIMUM HEATING
TEMPERATURE DIFFERENTIAL IS SIXTY
DEGREES F FOR ANY
CEILING HEIGHTS.

- A—Film, Television & Sound Recording Studios, and Broadcasting Control Rooms.
- B—Private Offices, Hotel Bedrooms, Sick Rooms, Broadcasting Studios and Residences.
- C—Libraries, under Balconies of Theatres and Auditoriums, Concert Halls, Classrooms, Museums, and Hospital Operating Rooms.
- D—General Offices, Restaurants, Theatres & Auditorium Ceilings, Lecture Halls, Stores, Large Hotel Dining Rooms and Dance Halls.
- E—Department Stores, Hotel Lobbies, Industrial Exhibit Rooms and Restaurant Kitchens.
- F—Factories, Store Rooms, Engine Rooms, Greenhouses, and spaces where Duct Noise is of no importance.

FIG. 2: Air-diffuser size should depend upon recommended neck velocities and volume of air it is to handle. Type B Anemostat; size numbers roughly correspond to diameter in inches of the largest cone.

Size No.	Neck Dia. in.	Neck Area Sq. in.	Neck Area Sq. Ft.	NECK VELOCITY IN FEET PER MINUTE																	
				700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2500	3000	
				CAPACITY IN CUBIC FEET PER MINUTE																	
10	4	12.56	.087	61.1	69.8	78.5	87.3	96.0	105	113	122	*131	140	148	157	166	175	192	218	262	
12.5	5	19.63	1.36	93.4	109	123	136	150	164	177	191	205	218	232	245	259	273	300	341	409	
15	6	28.27	1.96	137	157	177	196	216	236	255	275	295	314	334	353	373	393	432	491	589	
20	8	50.26	3.49	244	279	314	349	384	419	454	489	524	558	593	628	663	698	768	873	1047	
25	10	78.54	5.45	382	436	491	545	600	655	709	764	818	873	927	982	1036	1091	1200	1364	1636	
30	12	113.10	7.85	550	628	707	785	864	942	1021	1100	1178	1257	1335	1414	1492	1571	1728	1964	2356	
35	14	153.94	10.69	748	852	967	1069	1176	1283	1390	1497	1604	1710	1817	1924	2031	2138	2352	2673	3207	
40	16	201.06	13.96	977	1117	1257	1396	1532	1676	1815	1955	2094	2234	2374	2513	2653	2793	3072	3491	4189	
45	18	254.47	17.67	1237	1414	1590	1767	1944	2121	2297	2474	2651	2828	3004	3181	3358	3534	3888	4418	5302	
50	20	314.16	21.81	1527	1727	1943	2163	2400	2618	2836	3054	3272	3491	3709	3927	4145	4363	4800	5454	6543	
55	22	380.13	26.39	1848	2112	2376	2640	2904	3168	3432	3696	3960	4224	4488	4752	5016	5280	5808	6600	7919	
60	24	452.39	31.41	2199	2513	2827	3142	3456	3770	4084	4398	4712	5027	5341	5655	5969	6283	6912	7854	9420	
65	26	530.93	36.87	2581	2950	3318	3687	4056	4424	4793	5162	5531	5899	6268	6637	7005	7374	8111	9218	11061	
75	30	706.86	49.08	3436	3927	4418	4909	5400	5891	6381	6872	7363	7854	8345	8836	9327	9818	10799	12272	14726	
95	38	1134.10	7.875	5513	6301	7088	7876	8663	9451	10238	11026	11814	12601	13389	14176	14964	15751	17227	19689	23627	

In the capacity table (Fig. 2) under 1800 fpm neck velocity is found 5655 for the size No. 60, Type B, Anemostat. Further examination of the table shows that the same diffuser handles air at 5027 cfm with a neck velocity of 1600 fpm. By interpolation, 5000 cfm will be delivered at 1555 fpm neck velocity.

A final check (see diffusion table, Fig. 3) shows that size No. 60 has a satisfactory radius of diffusion: 21 to 43 ft.

Naturally, it is not always possible to divide the plan into squares—or to center the diffusers in the divisions—as in this example. Therefore, rectangles are permissible if the longer sides do not exceed the shorter by more than 3/2.

If a diffuser cannot be placed in the center of an area, the longer perpendicular distance from a side should not exceed the shorter by more than 3/2.

FIG. 3: Table showing radius of diffusion in feet for Type B Anemostats using various neck velocities

Size No.	Neck Dia. in.	NECK VELOCITIES IN FEET PER MINUTE																	
		700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2500	3000	
10	4"	3-5	3-5	3-6	3-6	3-6	3-7	3-7	3-7	3-7	3-8	4-0	4-0	4-0	4-9	4-9	5-10	5-11	
12.5	5"	3-6	3-7	3-7	3-7	4-0	4-0	4-0	4-0	4-9	4-10	5-10	5-10	5-11	5-11	5-11	6-12	7-14	
15	6"	4-0	4-0	4-9	4-9	4-9	4-10	5-10	5-11	5-11	5-11	6-12	6-12	6-12	6-12	7-13	7-13	8-17	
20	8"	5-10	5-11	5-11	6-12	6-12	6-12	6-13	7-14	7-15	7-15	8-16	8-16	8-17	8-17	9-18	10-20	11-23	
25	10"	6-13	6-13	7-14	7-15	7-16	8-17	8-17	8-17	9-18	9-19	10-20	10-21	10-21	10-21	11-23	12-25	14-28	
30	12"	8-15	8-16	8-16	8-17	9-18	9-19	10-20	10-21	11-22	11-23	12-24	12-25	12-25	12-25	13-26	15-30	17-34	
35	14"	9-18	9-19	9-20	10-21	10-22	11-23	12-24	12-24	13-25	13-26	14-28	14-28	14-29	15-30	16-32	17-35	20-39	
40	16"	10-21	10-22	11-23	11-24	12-25	12-26	13-27	14-28	14-29	15-30	16-32	16-33	17-34	18-36	20-40	22-45	27-50	
45	18"	11-23	12-24	12-25	13-27	13-28	14-29	15-30	15-31	16-33	17-34	17-35	18-36	18-37	19-39	20-41	22-45	25-50	
50	20"	12-26	13-27	14-28	14-30	15-31	16-32	16-33	17-35	18-36	18-37	19-39	20-40	20-41	21-43	22-46	23-50	27-54	
55	22"	14-28	14-30	15-31	16-33	17-34	17-35	18-37	19-39	20-40	20-41	21-43	22-46	23-47	23-47	25-50	27-54	31-62	
60	24"	15-31	16-32	17-34	17-35	18-37	19-39	20-40	21-42	21-43	22-45	23-47	24-48	25-50	25-51	27-54	30-60	33-67	
65	26"	16-33	17-35	18-37	19-38	20-40	21-42	21-44	22-45	23-47	24-49	25-50	26-52	27-54	28-55	29-59	32-64	36-73	
75	30"	19-38	20-40	21-42	22-44	23-46	24-48	25-50	26-52	27-54	28-56	29-58	30-60	31-62	32-64	34-68	37-74	42-84	
95	38"	24-48	25-51	26-53	27-56	29-58	30-61	31-63	33-66	34-69	35-71	36-74	38-76	39-79	40-81	43-86	47-94	53-106	

The Frozen



FROZEN FOOD PROCESSORS

Market \$10,000,000



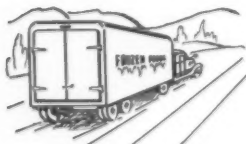
FROZEN FOOD WAREHOUSES

Market: 50 million cu. ft.



FROZEN FOOD TRANSPORTATION

Market: 10,000 trucks
2,000 refrigerator cars



FROZEN FOOD DISTRIBUTION

Market: 2,000 holding rooms



FROZEN FOOD LOCKER PLANTS

Market: 3,000-4,000 per year



The refrigeration industry expects to produce this year more than one-half million units of low temperature equipment for use in one division or another of the frozen foods business. Here is an estimate of present and future needs in this field

THE refrigeration industry expects to manufacture in 1947 more than 500,000 units of low temperature equipment going directly into use in one division or another of the frozen foods business, and not including equipment for home use, according to a survey of the current situation in the production of frozen food equipment, just completed by the Refrigeration Equipment Manufacturers Association.

"The mechanical refrigeration industry based its first postwar production plans on the increase in frozen food consumption from 300 million pounds annually at the start of the war to more than one billion pounds annually at the current rate," a statement from the association said. "This is an increase of slightly more than 300% which is approximately the same increase as has been attained in the production capacity of the industry. For the future, the manufacturing industry has considered, in making its plans, the recent prediction of government economists that, within 10 years, about 50% of all perishable foods will be preserved by freezing. At present, less than 2% of perishable foods are frozen."

Here is the way members of the Refrigeration Equipment Manufacturers Association view the existing market for frozen food equipment:

Frozen Food Processors: A grand total of approximately 750 companies in the food industry now are engaged in processing and freezing foodstuffs in one form or another. In most cases, the larger packers concentrate on freezing fresh vegetables, fruits, meat and fish on a volume basis, but many smaller plants are well into the distribution of frozen specialties ranging from frozen hors d'ouvres to frozen pie. All these companies employ mechanically refrigerated fast freezing equipment that produces temperatures as low as -35 F for various methods of commercial fast freezing. Most processors, in addition, have their own freezer warehouse space or zero holding rooms, and many of them operate their own refrigerated trucks or trailers.

Since commercial fast freezing actually started in the early 1930's and had reached an annual production exceeding 100 million pounds by 1938, much of the equipment of processors is out of date or in need of replacement, and more efficient freezing methods developed during the war and later have influenced processors to revise methods and purchase new equipment. The immediate market for freezing equipment alone in processing plants is estimated at \$10,000,000.

Added to this market, manufactur-

THE REFRIGERATION INDUSTRY

Food Equipment Picture

ers have been advised of the need for additional freezer warehouse facilities for private use by packers. One report indicated that at least 300 processors are planning to build their own freezer storage space equivalent in total capacity to 1500 railroad cars of some 60,000 tons, all for storing frozen foods at point of production.

Manufacturers also have been advised of the intention of some packers to build mobile processing plants which can be moved to areas of actual food harvesting or production, permitting freezing operations to be completed immediately. This will create a further demand for new and complete refrigeration equipment.

Processors themselves operate fleets of refrigerated trucks and trailers and also employ regular commercial refrigerated transportation in great volume, for all of which a heavy demand exists.

Not included in the above are the new equipment and replacement requirements of the 6,400 ice cream plants in the United States, all of which use mechanically refrigerated equipment operating at as low as -30 F for freezing and hardening ice cream.

Frozen Food Warehouses: Although nearly 20 million cubic feet of freezer space has been added in public cold storage warehouses since 1943, the Department of Commerce estimates that still only 15% of the 800 million cubic feet of cold storage space in public warehouses is freezer space. The remainder is ordinary cold storage space for eggs, butter, meat, poultry and other perishable foods that are not frozen.

Based on the predictions that 50% of all perishable foods will be preserved by the middle 1950's, an additional 360 million cubic feet of freezer

space eventually will be required in public warehouses. Manufacturers believe the immediate market is for equipment to provide zero temperatures in at least 50 million additional cubic feet of storage space.

Frozen Food Transportation:

Although nearly 100 million pounds of frozen foods were shipped in refrigerated railroad cars in 1945, it is estimated that there are fewer than 1,500 insulated refrigerator cars in present service that have refrigeration equipment for transporting frozen foods. It also is reported that there are only 4,600 trucks with direct-mounted bodies and only 4,700 semi-trailers that are insulated and refrigerated. Very few of these have equipment to maintain zero temperature needed to properly preserve foods after freezing.

To supply the transportation needs in the frozen food field through all channels of distribution from producer to retailer, more than 2,000 new railroad cars and 10,000 new trucks and trailers are needed at once, according to frozen food economists. All of this mobile equipment should be refrigerated and insulated, and all used for transporting foods after they are frozen will need equipment to maintain zero temperatures.

It is estimated that there is a demand for as many as 10,000 of these insulated, mechanically-refrigerated L.C.L. shipping containers during the remainder of 1947.

Frozen Food Distribution

(Wholesalers): About 400 frozen food distributors, 78% of whom formerly were engaged in handling other food products, either maintain their own zero storage facilities or use public warehouses. It is estimated

Continued on page 55

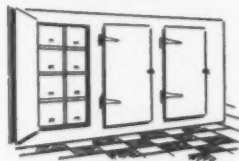
FROZEN FOOD RETAILERS

Market: 150,000 units



APARTMENTS AND RETAIL STORES

Market: 4,000,000 lockers



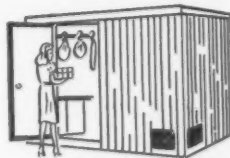
AVERAGE HOMES AND FARMS

Market: 1,000,000 units



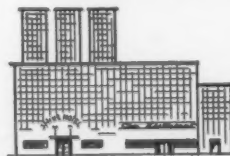
LARGE HOMES AND FARMS

Market: 25,000 units



HOTELS AND RESTAURANTS

Market: 10,000 hotels
200,000 restaurants



COOLING FOR HUMAN COMFORT

By S. C. Moncher

Regional Manager
Electric Power Equipment Co.

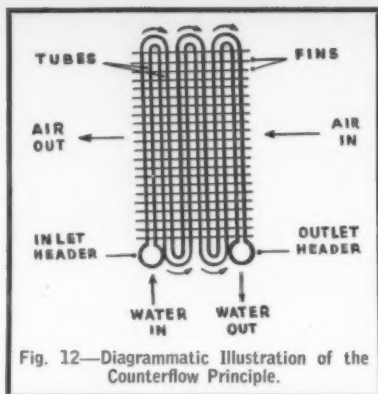


Fig. 12—Diagrammatic Illustration of the Counterflow Principle.

PART 8 (Concluded)

Determining Capacity of Equipment Using Water As Cooling Medium

COUNTERFLOW PRINCIPLE OF HEAT EXCHANGE: In comfort cooling installations, water coils are installed in such a manner that there will be a counterflow between the air and the water passing through the coil. Counterflow is obtained when the cold water enters the side where the cooled air leaves the coil, and the warmed water leaves at the side where the warm air enters the coil. (See Fig. 12.) In this manner, the coldest water comes in contact with the coldest air, and the warmest water with the warmest air, thus making for maximum efficiency by allowing the greatest average temperature difference between air and water.

By using the counterflow principle, a leaving air dew-point temperature as little as 3 degrees above the temperature of the entering water becomes practical. To avoid the necessity of using an excessively large coil, however, the wet-bulb temperature of the leaving air should be a minimum of 5 degrees above the entering water temperature; and the dry-bulb temperature of the leaving air, a minimum of 7 degrees above the entering water temperature. Let us now check the air supply temperatures for the various conditions of the problem we are considering in order to determine whether the temperature differences between the leaving air and the 55 F entering water fall within these limits.

The air supply states for the various room conditions as determined in Article 6, together with their dew-point

temperatures as determined from the psychrometric chart are as follows:

Room Condition		Air Supply		
DB	WB	DB	WB	DP
80	67	62.5	60.5	59.6
81	66	59.6	57.8	56.7
82	64	54.3	52.8	51.5

An examination of the above figures shows that the only room condition having an air supply which satisfies the minimum temperature difference requirements described above is the room condition of 80F DB—67F WB. The temperature differences between the 55 F entering water and the leaving air dry-bulb, wet-bulb, and dew-point temperatures are 7.5 degrees, 5.5 degrees and 4.6 degrees, respectively.

DATA NECESSARY FOR SELECTION OF WATER COILS: When using water cooling coils, there is certain data which must be determined in addition to (a) total heat load and (b) entering and leaving air temperatures, before coils may be selected. Some of this information—for example, temperature and quantity of water available—is inherent in the nature of the particular problem to be considered. Other factors, however, such as (1) water temperature rise through the coil, (2) mean effective temperature difference between air and water, and (3) coil face area required, must be calculated from the data available. Item 3, coil face area required, has been discussed in Article 7,

where it was shown that the required face area is equal to the supply air volume divided by the face velocity. (See Formula 10: $fa = \frac{cfm}{fv}$.)

The other two items necessary for water coil selection will be discussed in detail below.

(1) WATER TEMPERATURE RISE THROUGH COIL: The temperature rise in the water flowing through a coil may be found by dividing (a) the total hourly heat load by (b) the product of the number of pounds of water passing through the coil per hour multiplied by the specific heat of water (which is 1). Using gallons per minute instead of pounds per hour, this relationship may be expressed by the following formula:

FORMULA 12

$$tr = \frac{\text{Btu}}{\text{gpm} \times 500} \quad \text{where,}$$

tr = temperature rise, degrees F

gpm = quantity of water available, gallons per minute

500 = factor for converting gpm to pounds per hour, obtained by multiplying the number of pounds in one gallon of water (8.3) by the number of minutes in an hour (60).

As the temperature rise of water flowing through a coil increases, the average temperature difference between the water and the air through the coil will decrease. For example, if the water enters at 55 F and leaves

at 65 F, we might assume an average water temperature of 60 F; if the water enters at 55 F and leaves at 75 F, however, we might assume an average water temperature of 65 F. If the average air temperature through the coil is 80 F, then the temperature difference in the first case is 15 degrees, and in the second case only 10 degrees.

Since the capacity of a coil increases as the average temperature difference increases, the greater the temperature rise of the water through the coil, the greater will be the size of the coil required for a specific installation. The amount of water required to do the cooling job, however, will decrease. The maximum temperature difference is limited by the fact that at any point in the coil where the water reaches a temperature equal to the dew-point temperature of the air passing at that same point, the value of the coil as a dehumidification agent ceases. Where dehumidification is required, therefore, it is important to control the water temperature rise in order to prevent too much of the coil surface from rising above the dew-point temperature of the air.

In order to strike an economic balance between size of coil and amount of water, a water temperature rise between 5 and 15 degrees is commonly used. This will require a water supply of approximately 1½ to 5 gallons per minute per ton of refrigeration. If the water supply available is less than 1½ gpm/ton, then a temperature rise greater than 1 degree will be necessary. In installations where dehumidification is required, this is feasible only when the initial water temperature is low enough so that the coil surface temperature will

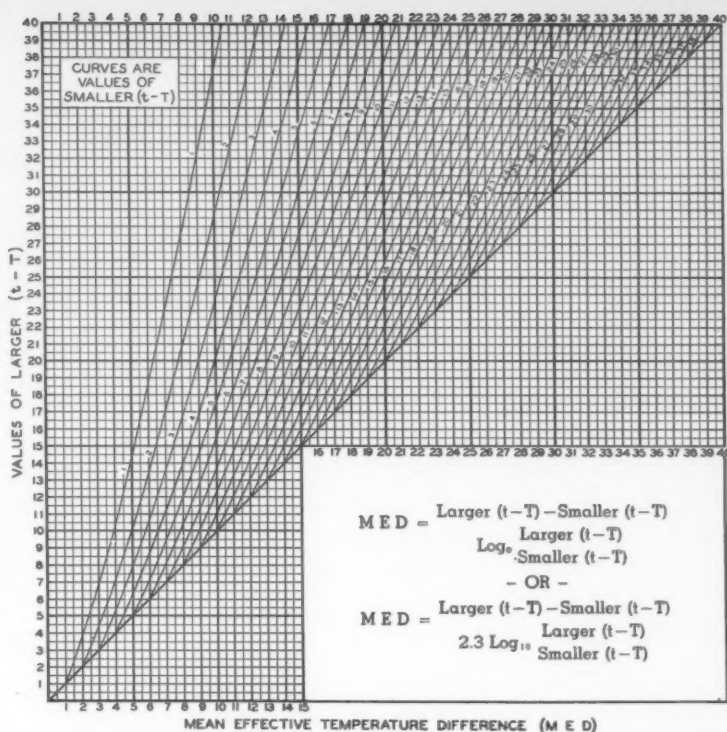


Fig. 13—Mean Effective Temperature Difference (M E D) Chart. (From American Blower Corp. Bulletin 1521.) Note: t —Air temperature, initial or final, F; T —Water temperature, initial or final, F; $(t-T)$ —Initial air temperature—final water temperature; $(t-T)$ —Final air temperature—initial water temperature. Obtain both values of $(t-T)$ and use them in the Chart or in either of the equations in the insert to determine M E D. If either or both values of $(t-T)$ are larger than 40, divide both values by a number which will make both less than 40. Then find the M E D for these divided values from the curve and multiply by the number to get the correct M E D.

remain below the dew-point temperature of the air throughout most of the coil.

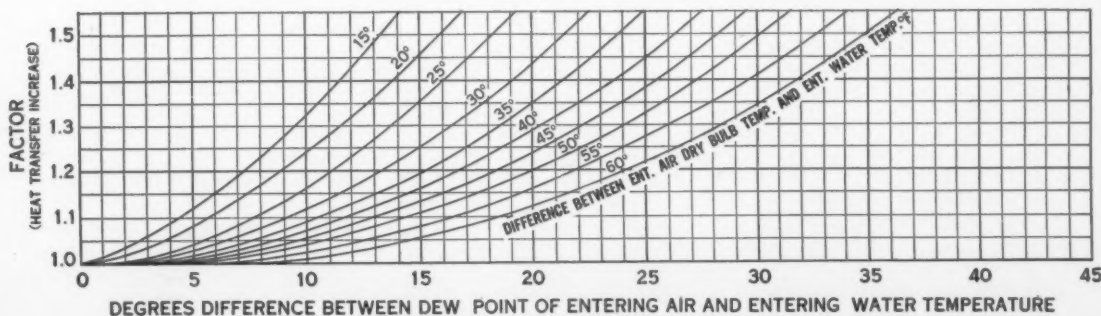
Let us now calculate the water temperature rise for the problem we are considering. We may recall that 20 gpm of 55 F well water are available,

and that the total heat load for the room condition of 80F DB—67F WB is 92,750 Btu/hr.

By substituting in *Formula 12*, the temperature rise through the coil may be calculated as follows:

Continued on page 77

Fig. 14—Increase in Heat Transfer Due to Wetted Fin Surface. (From Trane Co. Bulletin DS-365.)



THE LAW LENDS A HAND

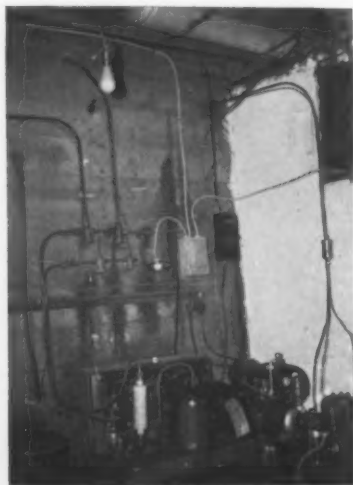
Laws affecting the users of refrigeration equipment also affect the sellers. The alert contractor will keep an eye on the local legislative hopper

LOCAL legislation often can be decidedly helpful in paving the way for added business for the refrigeration contractor. Take, for instance, the case of Lansing, Mich., capital city of the state and home of the state college.

For years the law in Lansing township had forbidden the sale of liquor by the glass. Consequently all taverns, night clubs, and road houses operating on a legitimate basis could sell only beer and wine to their patrons.

Recent legislation repealing this old law changed all this, however, and promptly upon its passage large

This is the equipment involved in the "changeover" installation. The 3/4-hp condensing unit which formerly chilled the walk-in cooler now is connected directly to a Temprite unit at the bar. The equalizer tank can be seen suspended from the ceiling. The 1/3-hp unit (lower right) cools a back bar.



Kenneth DeKubber (center) admires a heady glass of beer drawn from the new cooling system which he installed in this tavern. Harold Dobrowa holds the "sample" as Hazel Glazier looks on.

numbers of the city's drinking spots set about to convert their establishments from "beer garden" to "cocktail lounge" status. As part and parcel of this attempt to dress up their places of business, many operators undertook to revamp their beer cooling methods in order to provide patrons with more satisfactory service in all ways.

This conversion business furnished a ready-made opportunity for an alert refrigeration contracting firm such as DeKubber & Lockwood Refrigeration Service, which made a practice of actively soliciting such change-over installations.

This firm is operated by Kenneth DeKubber and Leslie Lockwood, who have conducted this partnership enterprise for the past three years. Previously the two men had worked together with other Lansing refrigeration firms. While they started out strictly as a service organization, they took on the merchandising of new equipment just as soon as good lines became available.

Typical of the beer cooling conversion jobs handled by this firm after the new legislation was placed in effect is the installation which the partners made in the New Tavern, just a few doors down the street from their own place of business. This tavern is owned by Edward Czubak.

The old equipment for cooling

draft beer in this tavern consisted of a 3/4-hp Kelvinator condensing unit which provided refrigeration for the basement walk-in cooler in which the kegs were set. Beer was drawn from these kegs directly to the dispensing taps at the bar, without further refrigeration. This arrangement was definitely unsatisfactory, for it was virtually impossible to properly control the drawing temperature of the beer due to the long length of uninsulated line through which it had to pass after leaving the cooled keg.

To solve this problem, DeKubber & Lockwood installed a Temprite F26-B2-W2 instantaneous beer cooling unit right in the tavern's bar beneath the beer faucets. This unit was connected to the 3/4-hp Kelvinator condensing unit which previously had cooled the walk-in, and it was provided with a Temprite No. 2 equalizer tank which was suspended by brackets from the basement ceiling directly above the condensing unit. This equalizer tank, which prevents short cycling of the condensing unit by acting as a suction gas storage tank between the lowside and the compressor, is hooked into the system's suction line in standard fashion.

The temperature control on the Temprite unit regulates the system's back pressure as well as controlling the beer temperature right at the

Continued on page 66

**For Positive Maintenance of
HIGH HUMIDITY...**

PEERLESS

FLASH COOLERS!

● Where coolness without dehydration is essential, PEERLESS Flash Coolers give the desired performance. These are the original Flash Coolers, introduced 15 years ago by PEERLESS, and improved to their present high-efficiency in the refrigerating of cut meats, flowers, and all products where high humidity must be maintained. Wide, shallow coils spread under ceilings enable these units to deliver large volumes of cooled air with high relative humidity. Install them in cold storage boxes, walk-in and reach-in refrigerators, for retailers, wholesale houses, packing houses. Better preservation of products by PEERLESS Flash Coolers brings customer satisfaction.

For superior performance specify all these PEERLESS products: Flash Plates, Flash Coolers, Unit Coolers, Ice Cube Makers, Fin Coils, Off Center Coils, Expansion Valves and Capacity Boosters. Write for Details.

● Higher operating back pressure with low flat coils provides higher compressor capacity, a more efficient installation with reduced operating cost.

● Open-louvered drip pan permits free circulation of air through coil surface which produces large volumes of cool tempered air flowing downward by gravity over stored products.

● Refrigerant circuit is continuous copper tube with aluminum fins — non-soldered return bends. No Joints! — No Leaks!

● The famous Peerless Internal Riffing swirls refrigerant over entire interior surface of tubing, insuring a 100% internal wetted surface and in turn 100% coil efficiency.

● A Flash Cooler occupies a space not to exceed 16" from ceiling. A complete unit, it is quickly, easily installed by bolting the convenient hangers to ceiling.

**SOLD THROUGH LEADING
REFRIGERATION SUPPLY WHOLESALERS**

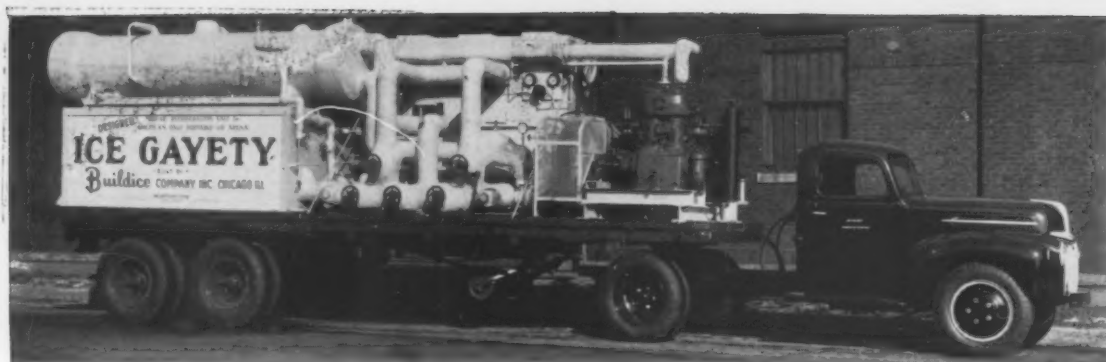
PEERLESS

of AMERICA, Inc.



General Sales Offices 2901 Lawrence Ave., Chicago 25, Illinois, U. S. A.

SEPTEMBER, 1947



This completely portable Worthington ammonia refrigeration system pumps the brine solution which freezes the skating rink for one of the country's traveling ice shows.

YOU *Can* TAKE IT WITH YOU!

By John E. Hubel

A TITLE like that obviously wouldn't apply to many large scale refrigeration installations, but it definitely does hold true in regard to the equipment which provides the ice rink for "Holiday On Ice", one of the country's traveling ice skating shows. This entire brine cooling system is handily "packaged" and mounted on a truck trailer, ready to be transported to any desired location and to be placed into operation simply by plugging it into the nearest convenient power line.

Laying the Pipe

A few days before the "Holiday on Ice" show (previously known as "Ice Gayety") comes to town, a crew of men get busy to prepare the foundation for the ice surface. From the time the pipe fitters start installing the 2x20-foot sets of 1/2-inch pipe which cover the 65x130-foot surface to the completion of the freezing process for the correct hardness of ice for skating, only about 72 hours elapse, according to the engineer on the job. The actual freezing takes only a couple of hours, he claims.

The crew that gets to town a few days ahead of the show date does not do any piping work. Local pipe fit-

ting firms are engaged for that purpose, partly because any good pipe fitter can connect the sections of pipe, laid on the floor according to diagram, and also because union labor rules usually demand that local labor be employed.

The company operating "Holiday on Ice" has several road shows of this kind, but all of the preliminary work of laying the piping and freezing of the ice is usually done the same way, in a manner similar to the erection of tents and sawdust rings for a circus.

In preparing the floor for the ice, about 40 cubic yards of sawdust and 12 tons of frozen sand are used on the cement floor for the foundation. The crew packs the sawdust around the pipes on the floor and then dumps a layer of sand 4 inches deep over the entire area which is to be covered with ice. The sand is soaked and frozen, after which water is sprayed on the sand over the piping to form a layer of ice about 3/4 of an inch thick.

Refrigeration for the freezing of this water is provided by a Worthington ammonia compressor, brine cooler, brine storage tank, and evaporative condenser, with all of the necessary auxiliary appurtenances. All of this equipment is mounted on a truck

trailer unit parked just outside the building in which the show is to be staged.

The brine, cooled to 14 F, is pumped through a 4-inch hose from this mobile refrigerating unit to the pipe sections imbedded in the sawdust and sand of the rink flooring. Power for the refrigerating mechanism is obtained through a hookup with the power lines in the building in which the show is being held.

Patching the Ice

Because the skates of the performers cut up the ice so badly, repair crews are kept busy each day following a performance spraying additional water on the ice to again form a smooth skating surface. Quick touch-up work, using the same spray technique, usually is accomplished during intermissions in the show. According to one of the engineers working with this show, it takes only 10 minutes to freeze another good surface on the ice.

When the show leaves town, the ice is ripped off with sharp tools and inside of 20 minutes all of it can be removed and stacked outside the building for thawing, the show's manager reports.



About People

Robert O. Dehlendorf, for the past two years eastern district manager of Emerson Electric Mfg. Co.,



has joined the sales staff of Jack & Heintz Precision Industries, Inc., as eastern district sales manager of the Electric Motor Div. He will

make his headquarters in New York City. Mr. Dehlendorf was associated with Emerson Electric for 23 years, the first 15 in various engineering capacities, the final eight as a key sales executive. During the war he served as assistant to the company president.

C. J. Sieber has been named director of sales for Master-Bilt Refrigeration Mfg. Co., St. Louis manufacturer of beverage coolers and home freezers. Mr. Sieber has had some 30 years of experience in the refrigeration industry, having been engaged in the manufacture and sale of commercial refrigerator hardware.

Thomas E. Scott has been named eastern representative for Remco, Inc.



With headquarters in New York City, Mr. Scott will cover Maine, Vermont, New Hampshire, New York State through Rochester, Massachusetts, Rhode Island, Connecticut,

eastern Pennsylvania, New Jersey, Delaware, Maryland, and Washington, D. C. For the past two years he has been an instructor in refrigeration

and air conditioning at the West Side YMCA Technical School, New York City.

E. B. Derr has been appointed product specialist on refrigeration for International Harvester Co., Chicago, succeeding H. N. Ross, who has retired. **H. L. Sawvell** has been named assistant to Mr. Derr.

I. H. Cohler has been appointed sales representative in the Chicago area for Kramer Trenton Co. Mr.



Cohler's years of work as a manufacturers' representative in Chicago were interrupted during the war while he devoted himself to war plant engineering. His previous experience in the refrigeration field includes design and product engineering of various items of refrigeration equipment, and a period of more than four years in engineering and sales capacities with Kelvinator Div.

Three shifts among field sales personnel of Frigidaire Div., General Motors Corp., have been announced. **W. I. Buchanan**, manager of the Chicago branch of Frigidaire Sales Corp., has been named manager of the Pacific region, succeeding R. G. Hutchison, deceased. He will occupy regional offices in San Francisco. **H. J. Walker, Jr.**, manager of the St. Louis branch, has been appointed Chicago branch manager, replacing Mr. Buchanan. **R. W. Pocock**, manager of national business sales, commercial sales department, of Frigidaire in Dayton, has been appointed St. Louis branch manager succeeding Mr. Walker.

W. Walter Young has been named comptroller of Redmond Co., Inc., Owosso, Mich., manufacturer of low-range fractional horsepower electric motors. In his new capacity Mr. Young will be responsible for the accounting, financial, and credit operations of the Redmond organization.



William L. Maxson, president of W. L. Maxson Corp., a firm which pioneered in the freezing of complete packaged meals, died in Boston in mid-July. Mr. Maxson was chairman of the boards of Maxson Food Systems, Inc., and Victor Electric Products, Inc.

Heading a number of personnel shifts in preparation for expanded operations, **A. G. Loeffel** has been appointed vice president in charge of sales and development for Kennard Corp., St. Louis manufacturer of finned coils and blower units. For the past nine years he had served as sales manager and later chief engineer for Marlo Coil Co. **F. E. Ince**, with Kennard since 1940, has been named vice president in charge of application and research. **L. C. McGowan**, who joined the company last year, now is secretary; and **F. G. Bietsch**, a Kennard employee since 1942, has been named vice president in charge of accounting.

Theodore (Ted) Gruber has been appointed New York factory representative for Jordon Refrigerator Co., Philadelphia manufacturer of commercial refrigeration equipment. With headquarters in the RKO Building of Rockefeller Center, Mr.



Gruber will cover metropolitan New York, Long Island, Connecticut, and Rhode Island.

23% Net Profit PERCENT

How an enterprising small town dealer of commercial refrigeration equipment, in his first full year of business, chalked up dollar volume and profit figures worthy of the "big time"

YOU don't have to be a big town operator to be a big time operator. In fact there is many a commercial refrigeration dealer in a large metropolitan area who would cast a wistful and an envious eye at the net profit figure on the yearly balance sheet of Harry Haaser's refrigeration firm in Fremont, Ohio, a semi-rural community which boasts no more than 15,000 souls.

Last year, 1946, was the first full year of operation for Haaser Refrigeration Co., yet the company chalked up a net profit of \$15,149 on net sales of \$66,369. This figures to a profit margin of slightly over 23%—nearly double the national average of 12.4% computed by Dun & Bradstreet for commercial refrigeration firms doing a comparable business volume. And this despite the fact that the company's gross profit for the year was only \$19,219 or 29.2% of total sales, compared with the 33% average gross shown by the Dun & Bradstreet survey.

What's the answer? How does a commercial refrigeration firm in a town that size uncover that much business in a year? And having found the business, how does it manage to hold the spread between gross and net profit (which, in effect, means its total operating expenses) down to about \$4,000, or 6.1% of net sales, when the Dun & Bradstreet

Mimeographed penny postcards are mailed frequently to both customers and prospects to remind them of the firm's services.



YES THIS DEALER TO BE

GE-WISE



survey shows the national average to be 20.6%?

To answer the last question first, Harry Haaser just points to the expense itemized as "direct labor charges", which totaled only \$603 for the year. "If you do all the work yourself," he explains simply, "you don't have to spread the profit around."

And that is virtually what Mr. Haaser did. Singlehandedly he served as his own sales force, his own installation crew, and his own service department. His wife Dorothy, not to be outdone, combined the duties of secretary and office manager with the job of floor salesman whenever her husband was out of the store.

The only outside help called in by the Haasers consisted of a man to help out with the delivery of equipment too heavy for Mr. Haaser to handle alone, and an accountant to whom they paid a straight monthly fee to keep the company's books and financial affairs in order.

Hard work, long hours, and the determination to "get ahead"—the old Horatio Alger formula—enabled the Haasers to keep their business (and their profit) "all in the family". And to this same formula, plus the excellent record of reliability and square dealing which Mr. Haaser had established firmly in his service work before entering the merchandising game, can be attributed the fact that at the end of that first year there was any business or any profit to keep.

Mr. Haaser first came in contact



Above—Mr. and Mrs. Haaser have good reason for satisfied smiles as they check over the figures on their company's balance sheet. Sales are rising steadily in comparison with last year's volume which totaled \$66,369, and the firm's profit margin still hangs high. Below—Mr. Haaser examines a self-service frozen food case which has just been moved on to the store's crowded sales floor.

with the refrigeration business some 10 years ago when he started working for his brother, who operated a beer distributing business. Among other things his job consisted of installing refrigeration equipment in the taverns, clubs, and other establishments served by the beer firm. As beer companies were prohibited by law from selling such equipment to their customers, Mr. Haaser gradually worked into this end of the business, too, following up on his own time the leads he obtained during working hours.

In 1942 he left this job to go to work in a war production plant, at the same time taking a night school course in machine shop practice. After six months of this he decided to quit and devote his full time to refrigeration servicing, which also was rated as essential war work.

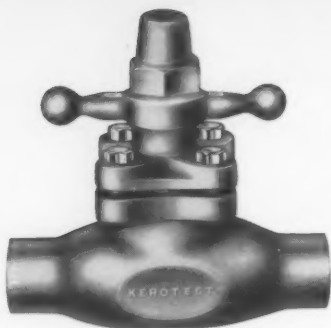
For a while he worked out of his home and a small shed in the back yard which he had converted into a shop of sorts. He managed to keep himself plenty busy by servicing equipment only for those customers with whom he had previously dealt during his days with the beer company, and so he made no efforts to

Continued on page 67

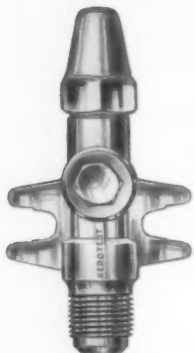


This is the store which the Haasers have run virtually by themselves, and through which they have built a tidy business.

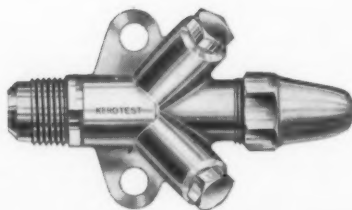
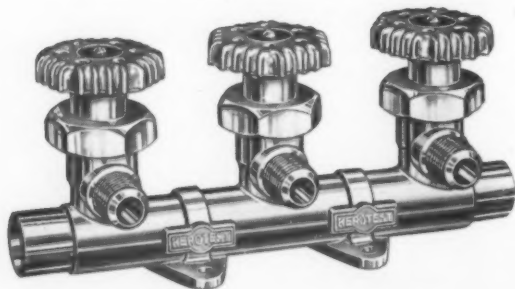
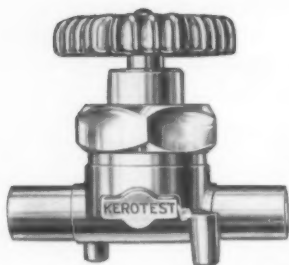




HERE ARE THE **NEW** KEROTEST VALVES YOU ASKED FOR..!



Your demand has been our command . . . and here are five of the new KEROTEST Valves that will give you still more of the characteristics you look for most in valves. More compactness . . . greater ease of installation . . . fuller efficiency . . . and greater dependability and service than ever . . . with economy. For the finest and newest in refrigeration and air conditioning valves . . . see your KEROTEST Wholesaler.



See your

KEROTEST

Wholesaler

KEROTEST MANUFACTURING CO.
PITTSBURGH, PA.

AMERICA'S FIRST NAME IN QUALITY VALVES

REFRIGERATION INDUSTRY

News

SIX MORE FIRMS JOIN REMA ROSTER

Six additional members have been added to the roster of Refrigeration Equipment Manufacturers Association to bring the current REMA membership to 108 firms.

New members are: Anheuser-Busch, Inc., refrigerated cabinet division; Arcade Mfg. Division of Rockwell Mfg. Co.; Frigidaire Division, General Motors Corp.; Jack & Heintz Precision Industries, Inc.; Sun Oil Co., and Tenney Engineering, Inc.

COMMERCIAL CREDIT WON'T SELL 'TERMS'

When Regulation W is abolished, Commercial Credit Corp. will return to financing terms fair alike to the purchaser and the dealer, Howard L. Wyengar, president of the company, has announced. Regulation W, federal wartime measure which curbed down payments and length of instalment contracts, is slated for Congressional abolition on Nov. 1.

Under the wartime power, buyers of refrigerators and similar appliances were required to pay one-third down and to complete payments within 15 months.

The sales finance company's policy was restated in a bulletin sent to its local offices.

"It has always been and will continue to be our policy to encourage the use of reasonable instalment terms in order to sell merchandise and conversely we are opposed to the practice of selling terms instead of merchandise."

RUSSELL NAMED TO STANDARDS COUNCIL

D. W. Russell, president of Airtemp Div., Chrysler Corp., has been unanimously elected as one of the two representatives from the Air Conditioning & Refrigerating Machinery Association to the standards council of the American Standards Association.

NEW CARRIER UNIT USES PROPANE GAS

A successful run-in test of the first centrifugal compressor ever to use propane in a refrigeration cycle—opening a new field of possibilities for the world's oil refineries—was completed this week by Carrier Corp.

Set up as a self-contained, complete package, including compressor and turbine as well as auxiliary oil pumps and oil coolers, the new centrifugal covers a floor area only five feet wide by 15 feet long. Carrier spokesmen reported the unit assured not only great space-saving as against reciprocating compressors, but lower original and maintenance costs as well. The refrigerant, propane, is an inexpensive by-product readily available in all refineries.

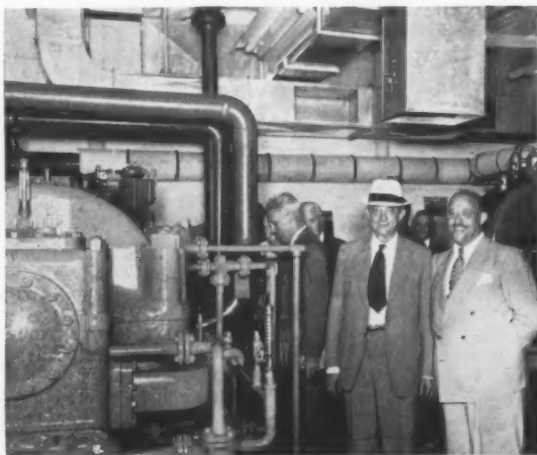
The first propane centrifugal, having passed its tests here, will be installed by the Atlantic Refining Co. in its new Point Breeze, Pa. plant by E. B. Badger & Sons Co., Boston contractors. Atlantic will use the machine in its dewaxing process, in which oil is chilled to approximately 25 F in order to congeal and

remove the wax base.

H. D. Robie, project engineer for E. B. Badger & Sons, said after the test that the Atlantic installation presented no particular problems.

"The saving in cost and space makes centrifugal compression an imperative method in the oil industry," Mr. Robie said. "As a rough rule of thumb guess, I would say that as against a reciprocating installation for this job the savings in first costs alone would be around 50 percent and the saving in floor space at least 66 percent."

The Atlantic unit, which has been labeled as Carrier's model 18T300, will have five stages. It is nominally a 2,000 cfm compressor and operates between the levels of 21 psia inlet pressure and minus 22 degrees, and discharges into a condenser at 195 psia. The compressor runs at a speed of approximately 9,400 rpm and requires 975 bhp. It will be direct connected to a 1.085 hp steam turbine and will operate on 600 and 700 degree steam with 15 pound exhaust.



Dr. Willis H. Carrier, chairman of Carrier Corp. (wearing hat), and Dr. L. M. Goldsmith, chief engineer of Atlantic Refining Co., inspect the first centrifugal ever to use propane in a refrigeration cycle.

70 FIRMS TO SHOW AT LOCKER MEETING

More than 70 exhibitors already have signed for space at the Eighth Annual Frozen Food Locker Exposition to be held Sept. 22 to 25 at the Municipal Auditorium, Kansas City, Mo., and hotel reservations already have been made for more than 1000 visitors.

All indications point to the fact that attendance at the Kansas City show will

FOUR MORE FIRMS TAKE SHOW SPACE

Four additional exhibitors have contracted for space at the Fifth All-Industry Refrigeration and Air Conditioning Exposition. They are: Lewin-Mathes Co., Lewin Metals Division; Weber Showcase & Fixture Co., Inc.; Refrigeration Appliances, Inc.; and Sun Oil Co.

nearly double that of any previous locker convention.

A new type of program has been set up under the direction of E. G. Spencer, president of the National Frozen Food Locker Association. General sessions will be short, with only two speakers featured at each. These sessions will be in the morning only. Afternoons will be devoted to eight separate "locker clinics". The same clinics will be repeated each day, with different leaders and different discussion panels.

Exhibitors which have signed for space since the list was published in last month's issue of The Refrigeration Industry magazine include:

Enrichment Products Co., Nor-Cal Mfg. Co.; Yoder Co.; Frosty Foods Equip. Co.; Armstrong Cork Co.; Gordon Johnson Co.; Frozen Food Products, Inc.; Owens-Corning Fiberglass Corp.; Kuekerbocker Stamping Co.; Wallis Systems; Everhot Mfg. Co.

Vaughan Co.; Refrigeration Corp. of America; Vanol Corp.; Minnesota Mining & Mfg. Co.; Dixie Canner Co.; Sanilite Co.; Graham Paper Co.; National Gypsum Co.; Baker Ice Machine Co.; Weed Conversion Co.; Paige Fencil Co.

DOLE TELLS PLANS FOR LOCKER SHOW

Dole Refrigerating Co. will have an exhibit of its vacuum cold plates in actual operation in its exhibit at the Eighth National Frozen Food Locker Convention and Exposition in Kansas City Sept. 22 to 25. Dole headquarters will be at Hotel Muchlebach and the company will occupy Booths 132 through 135.

Dole men who will attend the convention include: C. C. Ryan, H. P. Hansen, A. B. Brady, A. W. Monroe, J. A. Wilkerson, L. A. DeMore, V. D. Dyer, O. L. Rose, B. P. Tweed, E. J. Tweed, A. F. Sawyer and L. A. Sebastian.

MAY SALES HIT 281,252 UNITS

World sales of household electric refrigerators in May by 11 manufacturers reporting to the Household Refrigerator Section of National Electrical Manufacturers Association totaled 281,252 units, a slight gain over the 268,320 units reported for April by the same manufacturers.

May sales were divided as follows: domestic, 263,785; Canadian, 537; other foreign, 16,930. For the five months, the totals were: domestic, 1,111,385; Canadian, 6,016; other foreign, 68,326. World sales for the five months through May totaled 1,185,727 units.

Reporting companies included Admiral, Crosley, Coolerator, Hotpoint, Frigidaire, General Electric, Gibson, Kelvinator, Norge, Seeger (Sears) and Westinghouse.

57,475 BOXES MADE IN CANADA IN 1946

Production of domestic electric refrigerators in Canada during 1946 totaled 57,475 units, according to the Office of International Trade, U.S. Department of Commerce, Washington.

Imports of refrigerators by Canada totaled 14,923 units, valued at \$1,740,473, the agency said. Of these 11,053 were electric, household or store type. Refrigerator parts imports were valued at \$3,460,293.

Exports of refrigerators totaled 2,007 (720 electric) with a value of \$126,217, including parts.

ARMSTRONG CORK PLANS NEW LAB

Projected plans for construction of new laboratories, comparing with the most modern and attractive industrial research and development facilities in the country, have been announced by officials of the Armstrong Cork Co.

Bids for the construction of the research facilities on a 40-acre site, three miles from the Lancaster, Pa., headquarters of the Company, will be asked late this fall. It is hoped that the planned new laboratory will be ready for use by the summer of 1949.

The main research building will be of two- and three-story construction. In addition to the main building, a large single-story pilot plant, several smaller pilot plants, and a boiler house will be built.

In addition to the laboratory building program, the company announced plans for additions to its general offices which would increase available space about 30%.

DRAVO CORP. OPENS CHICAGO OFFICE

The Industrial department of Dravo Corp., Pittsburgh, has opened a Chicago office to handle sales and service of Dravo crane cab coolers for air conditioning crane cabs in steel mills, foundries and chemical plants, and other Dravo equipment.

The Chicago office covers northern Illinois and the industrial districts of northwest Indiana. T. W. Eshbach, who has been active in the heating and ventilating business since 1923, is in charge of the new branch office located at 208 S. La Salle St.

FLEISCHMAN FREEZER MOVES TO NEW PLANT

Fleischman Freezer Co., Inc. has just moved to new and larger manufacturing quarters, located at 450 South Boulevard, Bronx, New York.

As a result of vastly expanded manufacturing facilities, deliveries on the firm's freezers will be made much more quickly, and there will be new models added to the line.

SEEGER WINS PACKAGING AWARD



A lone workman quickly and easily slides a refrigerator condenser unit from the conveyor at the Seeger Refrigerator Co. plant onto the carrying cleats of this prize-winning wood wirebound crate.

A wire bound wood crate used by the Seeger Refrigerator Co. to carry refrigerator condenser units from its Evansville, Ind., factory won the first prize blue ribbon, emblematic of outstanding excellence among shipping containers, at the Protective Packaging Contest held in Chicago as a feature of the second annual Industrial Packaging and Materials Handling Exposition.

The first prize winner was entered under the name of R. J. Bauer, assistant purchasing agent of Seeger. The 17-pound nail-less crate carries an 85-pound condenser made for the Coldspot refrigerator featured by Sears Roebuck and Co.

Entries in the contest were judged by a committee of packaging and shipping experts, who carefully considered such things as initial cost of the container; ease and economy of packaging it; re-usability;

weight; sturdiness, strength and protection afforded contents; economy of space in shipping and other factors.

The blue ribbon wire-bound crate is of the same basic design used by the Seeger Refrigerator Co. to ship its famous condenser units for the past 15 years. A similar crate, of slightly different proportions but of the same engineering design, is being used by it to ship another style condenser.

The crates come knocked-down in three pieces—the four sides flat in one piece, the top, and the bottom—for storing in minimum space before being used. They are easily and quickly assembled by one worker, who fastens the top and bottom of the crate to three of the sides by the Rock fastener wire loops, which enhance the crate's structural strength and its ability to absorb shipping shocks and jars.

FLORIDA LOCKER MEN FORM ASSOCIATION

Organization of Florida locker plant operators has been effected with the formation of the Florida Frozen Food Locker Association. Earl E. Carver, Tampa, is president of the new group.

Other officers elected are: Alex R. Johnson, Sanford, vice president; L. R. Holman, Orlando, 2nd vice president; A. Lee Fisher, Tampa, secretary and treasurer. Directors are: H. M.

Hamilton, Milton; P. L. McMullen, Live Oak; L. V. McDougald, Palmetto; John Law, Fort Lauderdale.

Outlining four principal objectives, members of the group agreed to advance and improve the locker industry by encouraging high standards and sound business practices, to promote educational research, to interchange information between members, and to increase efficiency and usefulness of the industry to the public.

REMA EXPORT MEN MEET SEPT. 22

Members of Refrigeration Equipment Manufacturers Association interested in export will meet on Sept. 22 in Hotel Traymore, Atlantic City, according to W. J. Stelpflug, chairman of Rema's export committee. Suggestions have been solicited from Rema members as to what topics should be discussed at the meeting.

APPLIANCE OUTLET FORMS COMM'L DIV.

Edmundson Refrigeration Sales & Service has been established as a separate division of First Colony Distributors, Inc., electrical appliance distributor in Raleigh, N.C., to handle that firm's commercial refrigeration activities.

Heading this new operation as general manager is A. J. (Jack) Edmundson, secretary of the National Commercial Refrigerator Sales Association.

The Edmundson organization will share the new quarters of its parent firm at 310 S. Harrington St. The two organizations have a combined floor space of 12,000 sq. ft. for storage, display, and offices. The Edmundson division will handle the Hussman line of commercial refrigeration equipment.

First Colony will operate henceforth under the management of Ray H. Goodman, Jr. and will continue to carry its same lines of electrical appliances.

POOLE & KENT FORM CONTRACTING FIRM

Robert H. Poole and E. Robert Kent have formed the firm of Poole & Kent Co. to engage in mechanical contracting in and around Baltimore. Primary interest of the new company will be in the air conditioning and refrigeration field.

The partners plan to operate independently, and are not franchised to handle any manufacturer's line exclusively.

Mr. Poole formerly was with the Carrier Div. of United Clay Products. Mr. Kent for many years was with Mehring & Hanson Co., Washington, D.C., and previously was associated with the Carrier organization.

JAMISON ANNOUNCES PRICE REDUCTIONS

Jamison Cold Storage Door Co. has announced a price reduction of approximately 13 1/3%, effective Aug. 4. In announcing the reduction F. H. Wagner, Jr., general sales manager, said that it applied generally to the entire Jamison line, although price drop on products insulated with cork board is less than on those insulated with other materials.

Mr. Wagner said that the price reductions were the result of the installation of new metal and wood-working machinery, increased production following the completion some months ago of factory additions which upped production facilities by 50%.

Additional sizes of some doors have been included, and three new products have been added: an all-steel frame vertical sliding door, a keg passing door with flexible insulating curtain, and a "10-temp" door.

ILL. SERVICE DEALERS RECEIVE CHARTER

A group of 30 refrigeration service dealers operating in Illinois have organized the Refrigeration Service Dealer's Association, and as such have received a charter from the state.

This association is affiliated with a similar group previously formed in Hammond, Ind., where a strict licensing law already has been effected. The Illinois group now is working on a similar licensing law.

Officers of the Illinois association follow: Edward Riccio, president; Joe Dedich, vice president; John Habich, treasurer; Floyd Lilley, secretary; Al Delheim, sgt.-at-arms; John Heger, chairman of the board of directors; and Pat Doyle, Joe Barys, Al Michal, and Ray Frame, directors.

CANFIELD CO. OPENS NEW YORK OFFICE

The H. O. Canfield Co., Bridgeport, Conn., manufacturer of precision rubber and synthetic rubber products and parts for all industries, has just opened a New York sales office at 444 Madison Avenue, New York 22, with E. R. Staley in charge.

SALES UP 337% AT BORG-WARNER CORP.

An unprecedented rise in sales of Borg-Warner Corp. has been revealed in the report for the first six months of 1947. Sales of \$131,504,956 indicated an increase of 337% over a similar period in 1940 when the sales for the first six months totaled \$38,979,207.

Net profits of \$9,999,605 were reported for the half year.

NEW CURTIS OUTLET

J. F. Shelton Co., Memphis, Tenn., has been appointed distributor for the Curtis line of packaged air conditioning units manufactured by Curtis Refrigerating Machine Div., St. Louis.

1000 SALES EXECS TO MEET OCT. 30

More than 1000 business leaders will attend the Upper Midwest Sales Conference in Minneapolis October 30, it has been announced by Roy H. Warmee, general chairman.

Mr. Warmee, manager of sales promotion for Minneapolis-Honeywell Regulator Co., states that the fall conference will touch on all phases of distribution in the area. It is sponsored by the Minneapolis Association of Sales Managers and the Minneapolis Chamber of Commerce.

S. CAROLINA COMMERCIAL DEALERS ORGANIZE



These men were "among those present" when the Commercial Refrigeration Association of South Carolina was formed at a meeting of the state's commercial refrigeration dealers at the Jefferson hotel, Columbia. Officers elected unanimously by the group were: T. Louis Murray, president; J. W. Jennings, vice president; and Malcolm Vise, secretary and treasurer. Guest speaker at the meeting was A. J. Edmundson, secretary of the National Commercial Refrigerator Sales Association.

COOLING TOWER FIRM RESUMES PRODUCTION

Production of redwood cooling towers has been resumed by the Refrigerating Machinery Co., of San Francisco, reports C. W. Hulse of the company's cooling tower division.

The line of tower equipment has recently been refined by Edward Simons, an authority in this field who will be available for consultation on unusual or special applications, Mr. Hulse said.

New precision equipment and facilities for greatly increased capacity have been installed at the Nulco Fabricators plant, he added. Ample supplies of graded materials are available, and volume production is expected to permit competitive pricing of the tower equipment.

CENTURY ELECTRIC NETS \$1,260,787

Net income of Century Electric Co. for the first six months of 1947 totaled \$1,260,787, according to a report to the company's stockholders. Net sales for the same period amounted to \$10,795,747. An inventory reserve of \$200,000 also was set up in this period.

For the entire year of 1946 the company reported net income of \$1,198,453 derived from net sales of \$14,020,320.

MISSOURI GROUP IN ADVERTISING DRIVE

Air conditioning and refrigeration firms in St. Joseph, Mo., who formed an association two years ago, have started an advertising campaign in newspapers to inform the public of their work and aims.

The organization, known as the Refrigeration Association of St. Joseph, is composed of sales and service organizations, salesmen, wholesalers, and dealers of refrigeration and air conditioning equipment. Present officers are Fred Donovan, president; John Stillingbauer, vice president; Tom Hodgen, secretary, and Harold Walters, treasurer. Merle Murray is chairman of the board.

APRIL-MAY PROFITS CITED BY JAHCO

Jack & Heintz Precision Industries, Inc., realized a profit on its operations during the months of April and May, and the total gain during those months was sufficient to offset the company's first-quarter losses and establish a net profit for the first five months of 1947, it has been revealed.

Sales for the five-month period approximated \$8,200,000 of which \$4,500,000 represents sales in the two months of April and May.

No action was taken on the payment of the dividend due July 1, 1947, on the outstanding shares of the Cumulative Preferred Stock, 4% series. Arrears on such stock, as of July 1, 1947, will amount to \$1.50 per share.

NEW ELECTRIC MATRIC SALES OUTLETS

Appointment of two new representatives for Electricmatic products has been announced by Electricmatic division of the Simoniz Co., Chicago.

On the west coast, Russell Sales Co., Los Angeles, headed by Lewis V. Russell, will cover California, Oregon, Washington, Idaho, Nevada, Utah and Arizona. In the east, William D. Keefe & Sons will represent the company in a western New York area comprising the counties of Jefferson, Oswego, Cayuga, Tompkins and Tioga and all those lying further west.

MORE THAN 300 VISITORS ATTEND AS THERMAL CO. INC., OPENS NEW QUARTERS



Top left—George Whalen, sales representative, and Tom Cross, division manager, of Thermal Co. talk things over with visitors Hugh Smart of Refrigeration Appliances, Chicago, and John Shenk of Alco Valve Co. Top right—Louise Antonson adds a touch of glamor to a home freezer display. Below—General view of the company's new quarters, as seen from one of the two mezzanines.

More than 300 visitors registered during the two-day "open house" which celebrated the completion of the new quarters of Thermal Co., Inc., refrigeration supplies wholesaler in St. Paul, Minn., according to reports from H. W. Small, president of the jobbing firm.

The new building, which boasts a 100-foot frontage, is located at 2526 University Ave., the main thoroughfare between the "loop" districts of the two Twin Cities. The building front is constructed of cream colored Mankato stone with a St. Cloud granite base. The entire frontage comprises a beautiful fluorescent-lighted showroom.

General offices are located on the main floor, with a mezzanine on both sides of the sales floor housing engineering, advertising, and executive offices.

An interesting feature of the building is the basement lecture room which will seat approximately 200 people. This room has its own facilities and a separate outside entrance, and meetings can be held there without disturbing the normal functioning of the company's business. A special commissary has been installed.

The entire front portion of the building is completely air conditioned. The system is automatically controlled and can be proportioned throughout the area wherever the need for it may occur.

Interior walls of the showroom are of cream colored decorative brick, and the floors are laid in an alternate pattern of red and brown asphalt tile. The building is entirely sprinklered, and its steel, brick, and concrete construction is practically fireproof.

OREGON FIRM TO MAKE HOME UNITS

Organization of a new \$250,000 corporation, Pioneer Refrigeration, Inc., at Corvallis, Ore., to engage in the manufacture of refrigerators has been announced. The corporation will be financed with \$200,000 in common and \$50,000 in preferred stock. Incorporators are C. E. Mariner, Mabel E. Mariner, Melvin L. Mariner and J. H. Gallagher, all of Corvallis.

The new corporation will take over the home freezer manufacturing business of the Chapman Mfg. Co., and for the present will operate with the same personnel in the Chapman plant in Corvallis. Erection of a new plant later is planned. The Chapman Refrigerator Sales, distributing agency for Chapman home freezers since 1939, will be merged with the new corporation. The Chapman company will devote its time to the manufacture of Chapco board and Chapco soil mulch, both products being made from wood waste and bark.

NEW CANADIAN CO. TO MAKE COOLERS

Formation of Multiple Refrigeration Products, Ltd., 587 Fleet St. West, Toronto, to make a line of commercial refrigeration cabinets for distribution through national accounts in Canada has been announced by Fred G. Peck, a director and general manager.

Mr. Peck, formerly director of research for Victor Products Co., Hagerstown, Md., said the first product would be an electric water cooler. Present plant area is 20,000 sq. ft.

4 NORGE PRICES RISE \$10—\$20

Increased material and wage costs have forced Norge Division of Borg-Warner Corp. to raise prices on four models of refrigerators. The new prices, effective July 1, apply to models in the lower price ranges. Increases amount to from \$10 to \$20 on the models affected; other units were unchanged in price. According to Howard E. Blood, president, the average price increase for the entire line amounts to less than 2 1/2%.

EFFECTIVE FINANCING WILL PROMOTE BETTER RELATIONS

WITH THAT SEGMENT OF THE PUBLIC TO WHOM YOU

LOOK FOR PROFITABLE SALES. TO BE EFFECTIVE IT

CAN'T BE STATIC. CONDITIONS CHANGE. COMPETITION

CHANGES. COMMERCIAL CREDIT PLANS FOR THE

COMMERCIAL REFRIGERATION INDUSTRY KEEP PACE FLEXIBLY

WITH THE REQUIREMENTS OF CHANGING MARKETS. YOUR

COMMERCIAL CREDIT REPRESENTATIVE CAN GIVE YOU

PRACTICAL HELP IN SETTING UP A FINANCING OPERATION

TO FIT YOUR PARTICULAR NEEDS. CALL HIM IN.

COMMERCIAL CREDIT CORPORATION

A Subsidiary of Commercial Credit Company, Baltimore

MORE THAN 300 OFFICES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

CONTRACTORS

News • Activities • Plans

While The Refrigeration Industry is not the official publication of the National Association of Refrigeration Contractors, the Editors assign this space each month to the association. The information below is furnished, for the most part, by the offices of the association and its local affiliates.

Narc to Give Full Cooperation To 1948 All-Industry Show

Board of directors of the National Association of Refrigeration Contractors, at its recent session in Cleveland, decided to extend NARC's full cooperation with the Jan. 26-29, 1948 All-Industry Refrigeration Exposition in Cleveland. While NARC's annual meeting is required to be held in October, a short form of this will be held at that time, with adjournment for most of the meeting to the time of the big exposition.

Official headquarters of NARC will be at the Allerton Hotel, as it was during the October, 1946 exposition. Special activities and meetings of especial value to refrigeration contractors will be conducted. Tuesday, Jan. 27 will be contractors and service engineers' day at the exposition. No others will be admitted on that day.

Laboratory Plan Studied

Continuation of an investigation of the possibilities for a laboratory testing procedure of important refrigeration accessories was decided as a valuable service to members. The failure of equipment due to

a faulty accessory can cause a contractor a great loss in time, effort, money and bad customer relations, through no fault of his own. It is proposed to remedy this injustice, if at all possible. NARC is interested in hearing from contractors, whether members or not, about accessory failures that seem to be from improper manufacture or inspection.

A code of ethics, under formulation for several weeks, is about ready for submission to all members for final comments prior to adoption. J. C. Ehlers of St. Paul is chairman of this committee.

Labor Relations Discussed

During the meeting the directors had a long discussion with Dr. Benjamin Werne, professor of labor relations at New York University and consultant to a number of associations. Dr. Werne brought out several points that will be helpful in assisting members having labor relations problems. Lee Shirar, chairman, Labor Relations Committee, said NARC had gathered much valuable information on this topic

and was in a position to assist members with their problems.

The Trade Relations Committee, under chairman F. J. Zoppel of Columbus, reported progress in improved relations with manufacturers and jobbers; and made a special recommendation that unfair merchandising practices of dairy, beverage and ice cream concerns be exposed. Evidence was at hand to show that this policy gets results. Instances have been found where a firm does not realize it is indulging in unfair trade practices.

A clarification of NARC's constitution and by-laws, including the internationalization of the association, was approved. One of the reasons for this is to permit membership by contractors in Canada, where considerable interest has developed. Nathan Edelstein of Brooklyn, chairman of the Legislative committee, is also working on refrigeration insurance classifications in hopes of reduced rates for contractors.

License Code Planned

Progress was reported on a suggested model license code, being handled by a special committee under chairman A. C. Ellerbusch of Detroit. When completed it will be available for state and municipal use.

An intensive membership drive will be launched soon. In charge will be W. L. Drake, Membership Committee chairman, Indianapolis; and Ed Wright, Publicity Committee chairman, Youngstown. This will include several attractive folders that members can use to get and hold business—to show customers and prospects why it pays to patronize NARC members who have subscribed to a code of ethics that includes proper work and customer satisfaction.

A report was given by L. C. Ander-

HERE'S SCENE FROM STATE-WIDE MEETING OF WASHINGTON REFRIGERATION CONTRACTORS



son, Chicago, Educational Committee chairman, on a survey of schools professing to teach refrigeration. It was found that there are very few in the country that have approval of the state approving agencies. NARC will attempt to prepare a guidance check list to assist prospective students in sizing up a school's facilities, teachers, equipment and curricula. There is need of a practical appraisal of schools for both contractor employers and employees.

The meeting was presided over by NARC president Warren Farr.

WASHINGTON STATE CONTRACTORS MEET

The first state-wide meeting of refrigeration contractors in the State of Washington was held recently at the Mayflower Hotel, Seattle, by the Refrigeration Contractors Association of Washington, Inc. Warren W. Farr, president of the National Association of Refrigeration Contractors, spoke on "Putting More Dollars in Your



Warren Farr, NARC president, and James Lessard, president of the Refrigeration Contractors Association of Washington.

Pocket by Working Together, Locally and Nationally."

Mr. Farr outlined the various things that a local association could do to make its services valuable; pointed out the things that a national association could best do; and emphasized the importance of a strong tie in between the national and local associations.

Also on the day's program was an address on "In Business for Profits" by Paul B. Reed, manager, refrigeration controls division, Perfex Co.; and one on "Air Conditioning" by Roy O. Smith, formerly chief engineer, Alaska Division, U. S. Engineers.

The program included a film on "How to Make A Sales Presentation Stay Presented" and a visit to the Refrigeration Engineering Co. and Auto-



YES, a completely new and revolutionary method of fireproof refrigeration construction using Zerocel Insulation has recently been developed by Gold Bond engineers. It not only brings you important savings over old-fashioned methods of low temperature insulation, but it also insures greater efficiency and permanence!

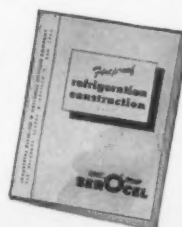
Zerocel installed with metal lath, channels, and Portland cement plaster replaces old-style construction methods using board forms of insulation. This insures stronger walls, ceilings (that won't fall down), and a better looking finish. With this construction, condensation does not occur in the insulation.



This versatile method, a development of National Gypsum Company's 20 years' experience in the construction industry, applies equally well to locker plant, cold storage warehouse, and processing plant problems. Find out all about this new method today! Fill in the coupon below and mail to Industrial Division, National Gypsum Company, Buffalo 2, N. Y.

SEND FOR FREE BOOKLET TODAY

National Gypsum Company,
Buffalo 2, N. Y.
Gentlemen:
Please send me a FREE copy of
the new Gold Bond Zerocel
Booklet, "Fireproof Refrigeration
Construction." 1-9
Name.....
Company.....
Street.....
City..... State.....



matic Refrigeration Co. in Seattle.

A buffet luncheon was served at noon; and the day's activities were climaxed by a cocktail party and dinner-dance at the New Washington Hotel, with 170 members and guests present.

On the day preceding the meeting, the board of directors met with Mr. Farr to discuss local and national policy matters. State plans for the year ahead were outlined and committees appointed on fair trade practices, codes and licenses, labor, ap-

prenticeship, education, programs, meeting attendance, and contractor-jobber relations.

James Lessard, association president, presided over the meetings, and arrangements were under the supervision of the association's manager, Arthur Carney.

The state association operates through five regional groups, each of which holds a regular meeting each month. While organized only last January, already the membership is 70 contractors.

HARRY LINDSAY DIES; WAS PEERLESS AGENT

Harry Lindsay, long a district sales representative for Peerless of America, Inc., died suddenly July 10 at his home in Indianapolis, Ind., as the result of a heart attack. He was 54 years old.



Mr. Lindsay had served the Peerless organi-

zation for some 10 years as a salesman in Ohio, Michigan, and Indiana. During the war he served with the War Production Board in Indianapolis, but at the war's end he returned to his duties with Peerless.

Through his long association with the industry he had come to be widely known, and had hundreds of friends throughout the refrigeration field.

COOLING CONTRACTORS ORGANIZE IN SOUTH

Air Conditioning Refrigeration Contractors Assn. of Shreveport, La., recently filed articles of incorporation there. Officers of the association are B. Segall, Jr., president; A. H. Otto, vice president; R. M. Hood, secretary; and E. J. Kearby, treasurer.

EARL G. MORGAN JOINS TRAMPOSH ORGANIZATION

Earl G. Morgan is now associated with E. L. Tramposh of Refrigeration



Equipment Co., Kansas City, Mo. He is handling the firm's industrial division. Mr. Morgan is a long time member of the American Society of Refrigerating Engineers, having just completed his

term as chairman of the Kansas City section of the society.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**

"Sealing with Certainty" with ROTARY SEAL

REPLACEMENT UNITS
FOR
COMMERCIAL, SEMI-COMMERCIAL,
AIR CONDITIONING and HOUSEHOLD
REFRIGERATION COMPRESSORS



UNIT NO. 14222

KNOWN THE WORLD OVER FOR
THEIR SIMPLICITY IN CONSTRUCTION,
INSTALLATION AND OPERATION



Available for over 848
models as shown on our
stock list and carried by
all leading jobbers.



2020 NORTH LARRABEE ST. • CHICAGO, 14, ILLINOIS, U.S.A.
CANADIAN AGENT: 2025 ADDINGTON AVENUE • MONTREAL, 28, QUEBEC, CANADA

FROZEN FOOD PICTURE . . .

Continued from page 37

that 350 of them need new or larger zero storage space, and one authority estimated that low temperature refrigeration equipment would be required to maintain zero temperatures for one to four freight carloads of frozen foods for each distributor. Another industry spokesman predicted that frozen food distributors will require some 2,000 new "on-the-premises" zero holding rooms of 50,000 pounds or more capacity. Some frozen food processors distribute their own products.

Frozen Food Locker Plants:

Some 8,000 frozen food locker plants now serve 13 million persons in farm or rural areas, according to the Department of Agriculture. In 1943, the number of locker plants was only 4,600, and various estimates put the future increase at as high as 3,000 to 4,000 per year, or a total of around 20,000 by 1950.

Since locker plants use both sub-zero equipment for freezing food and zero equipment for storage, refrigeration industry leaders look for one of their biggest increases in the directions of enlargements to present plants and entirely new plants.

Frozen Food Retailers: Recent Department of Commerce figures indicate that only 40,000 of 600,000 retail food stores now have equipment designed to store frozen foods at zero temperatures. The refrigeration industry has established 150,000 retail storage and display units as the current requirement of general food stores, department stores with food departments and stores that handle frozen foods only. Part of this production would go to stores already selling frozen foods, but it is believed that there should be sufficient output to provide equipment for 25,000 to 50,000 new stores and stores not now handling frozen foods.

Frozen Food Lockers in Apartments and Retail Stores: This is a comparatively new field, but one which will gain great headway as soon as new construction and remodeling increases in volume. Success of locker plants in rural communities have encouraged refrigeration leaders to plan for similar acceptance of the frozen

food locker idea in metropolitan cities where lockers could be installed in apartment buildings or in connection with retail stores. Individual lockers in these installations would be smaller in size, but the number, according to forecasts, should be at least equal to the lockers in rural plants, now numbering around 4,000,000, all of which are refrigerated at zero temperatures.

Average Homes and Farms:

The potential market for home and farm freezers and frozen food storage cabinets has been estimated by

manufacturers at 1,000,000 units and the potential market for new domestic household refrigerators has been figured at 17,500,000 units by the Department of Commerce. Most new home refrigerators have frozen food compartments of one or more cubic feet.

Large Homes and Farms: The demand for large walk-in type refrigerators, most of them with sizeable frozen food compartments, has been forecast at around 25,000 units during the next two years. These

*Dry as a bone—
Dry as the Sahara—
Dry as a DFN Dehydrator*

Yes! DFN

gives new meaning
to the word DRY!



DID YOU KNOW that one of the most difficult materials to keep dry is a drying agent? Only a few moments exposure to the atmosphere in handling, causes it to absorb considerable moisture, reducing its drying capacity when used on the refrigerating line.

THAT'S WHY every DFN Cartridge and Dehydrator is thoroughly baked at 300 F. for 3 to 4 hours (according to drying agent) in special ovens, to remove every trace of moisture. Each DFN Cartridge is instantly hermetically sealed in new, specially-designed, moisture-proof, metal-end containers . . . each DFN Factory-Sealed Derydrator is tested to 300 lb. pressure—baked—then immediately end-sealed.

RESULT? 100% drying efficiency until you use them—greater moisture absorbcency on the line—less frequent servicing of dehydrators.

This costs us time, equipment labor—but it costs you no more to benefit from this scientifically efficient DFN dehydration. Ask your jobber for DFN Dehydrators. Write us for Catalog R-7.

McIntire Connector Co., 257 Jefferson Co., Newark 5, N. J.

Only the

DEHYDRATORS • STRAINERS

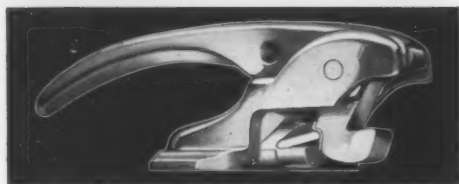
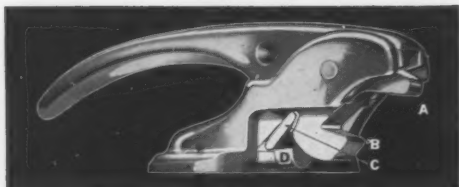
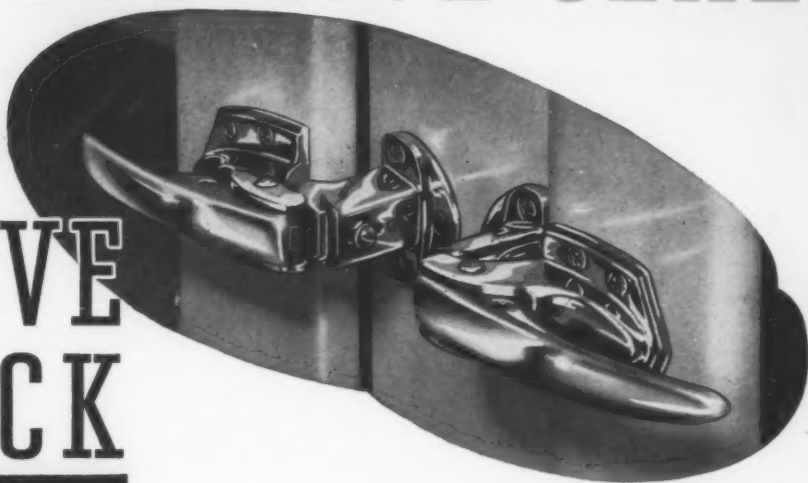


DEHYDRATES
FILTERS
NEUTRALIZES

FILTERS • NEUTRALIZERS

FOR a POSITIVE SEAL

Install a **POSITIVE LOCK**



THE LOCK WITH *THE Living Action*

This patented lock construction never relaxes its upward grip. When the trigger (A) touches the strike, that under-shot jaw (B) takes hold like a bulldog . . . with constant pressure from a powerful coil spring operating on an off-center plate (C) through the concealed bolt (D). That's why we call it "The Lock with the Living Action" . . . a principle exclusive with products of the Grand Rapids Brass Company.

*by America's Quality Manufacturers
of Commercial Refrigerator Hardware*

A seal can be no tighter than the lock that holds it. Refrigerator locks by Grand Rapids Brass Company provide **living action** . . . a positive, heat-proof closure that persists even when gaskets grow old. Precision-built and beautifully finished, these locks reflect credit on your own product and assure your customer a lifetime of efficient economical service. Available in a full range of sizes to fit the smallest display cabinet or the largest walk-in installation. May we send our catalog? Let us know how we can serve you!



**When it TRIPS
it GRIPS**

Grand Rapids Brass Company

Makers of Dependable Refrigerator Hardware for over 40 Years

Grand Rapids 1, Michigan

**SAVE 90%
IN TIME
AND MONEY!**



Now

YOU can reoperate valve plates ON THE JOB or IN THE SHOP... Quickly, Easily!

Yes, this amazingly low-priced kit makes it easy for any experienced refrigeration service man to grind, finish and test recessed or flush valve seats (either piston or flapper jobs). Speeds up work, saves buying new parts. No more tiresome hand-lapping.

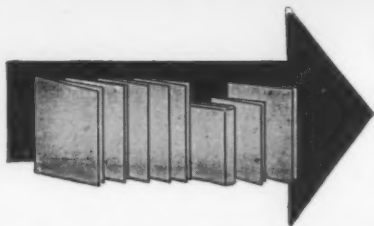
The Premier
SELF ALIGNING VALVE GRINDING KIT

**PAYS FOR ITSELF BY
REOPERATING AS FEW
AS 6 VALVE PLATES!**

All equipment necessary for handling $\frac{1}{2}$ " to $1\frac{1}{4}$ " valve seats, plus complete instructions, come packed in compact, hinged case.

See It at Your Jobbers!

THE PREMIER CO.
891 PARK AVENUE
BALTIMORE 1, MARYLAND



*Useful
Literature*

The publications listed below are available to readers without charge. Simply list on the postcard provided in this issue the numbers of the items you wish to receive, and send it to **THE REFRIGERATION INDUSTRY**, 1240 Ontario Street, Cleveland 13, Ohio. Your requests will then be forwarded directly to the companies concerned.

192—Low Temperature Insulation . . . "Holding Low Temperatures with Better Insulation" is the title of this 24-page 2-color manual covering selection of insulation, data on forms, properties, and application methods, and principles of vapor-proofing for various types of construction. Includes photographs, charts, and analyses of case-history installations. Available from Industrial Mineral Wool Institute.

193—Unit Coolers . . . A 14-page catalog composed of individual specification sheets on each type of cooling unit in the "Filterpure" line. Photographs, technical data, and list prices are provided for each model. Available from Betz Corp.

194—Valve Reference Chart . . . A 20-page valve cross-reference chart listing each model in the "OIC" line and then giving comparative tables designed to show what valve of this make compares with specific valves in other lines. Available from Ohio Injector Co.

195—Home Freezer Use . . . A comprehensive summary of the advantages of a home freezer, prepared by an actual user, comprises the bulk of this 16-page pocket-sized brochure. Packaging charts and freezing guides for both fruits and vegetables also are included. Available from The Coolerator Co.

196—Condensing Units . . . Complete specification sheets on both air-cooled and water-cooled Freon-12 condensing units manufactured by Worthington Pump & Machinery Corp. Construction features are itemized in detail.

197—Insulation Installation . . . A 16-page manual (A2.2.1) illustrating and describing in detail the proper installation procedure for "Fiberglas AE Board" when used in cold storage applications.

Locker Catalog

A complete catalog of frozen food locker plant equipment is being offered by Lockers, Inc., a firm which specializes in locker plant engineering and the distribution of locker equipment and supplies. The catalog is especially designed to be of use to locker plant operators, and contains valuable technical data and application information. Interested operators may obtain a copy of this catalog without charge by writing directly to: Lockers, Inc., 251 Post St., San Francisco 8, Calif.

Available from Owens-Corning Fiberglas Corp.

198—Fasteners . . . A new edition of the 40-page "Rivnut Data Book," describing construction of each type of these one-piece blind fasteners, listing sizes, dimensions, and grip range identifications, and detailing installation methods and tools. Available from B. F. Goodrich Co.

199—Automatic Locker Plants . . . The mechanism and operation of the "Salem" conveyor-type of "automatic" locker plant is illustrated and described in this 4-page 2-color folder. Available from Salem Engineering Co.

200—Metal Cleaner . . . A 4-page technical service data sheet (No. 3-1-1-2) outlining the features and applications of of "Deoxidine," a rust-removing and metal-cleaning compound. Available from American Chemical Paint Co.

201—Industrial Products . . . A 12-page bulletin picturing and describing the line of Allis-Chalmers products designed for a variety of applications in the heating, ventilating, and air conditioning field. Includes V-belt drives, centrifugal pumps, motors and controls, transformers and welders.

NEW FIRM FORMED IN SIOUX CITY

Commercial Equipment Co. has been incorporated in Sioux City, Iowa, with a capitalization of \$25,000. The firm will deal in refrigeration and air conditioning. Don O'Rourke is president, and Bernice O'Rourke vice president and secretary.

CONTROL FIRM BANKRUPT

Creditors of Temperature Control Devices, Inc., New Haven, Conn., manufacturer of temperature control equipment, have been notified by the U. S. District Court of Connecticut that this firm has been adjudged bankrupt on the basis of a petition filed July 25.

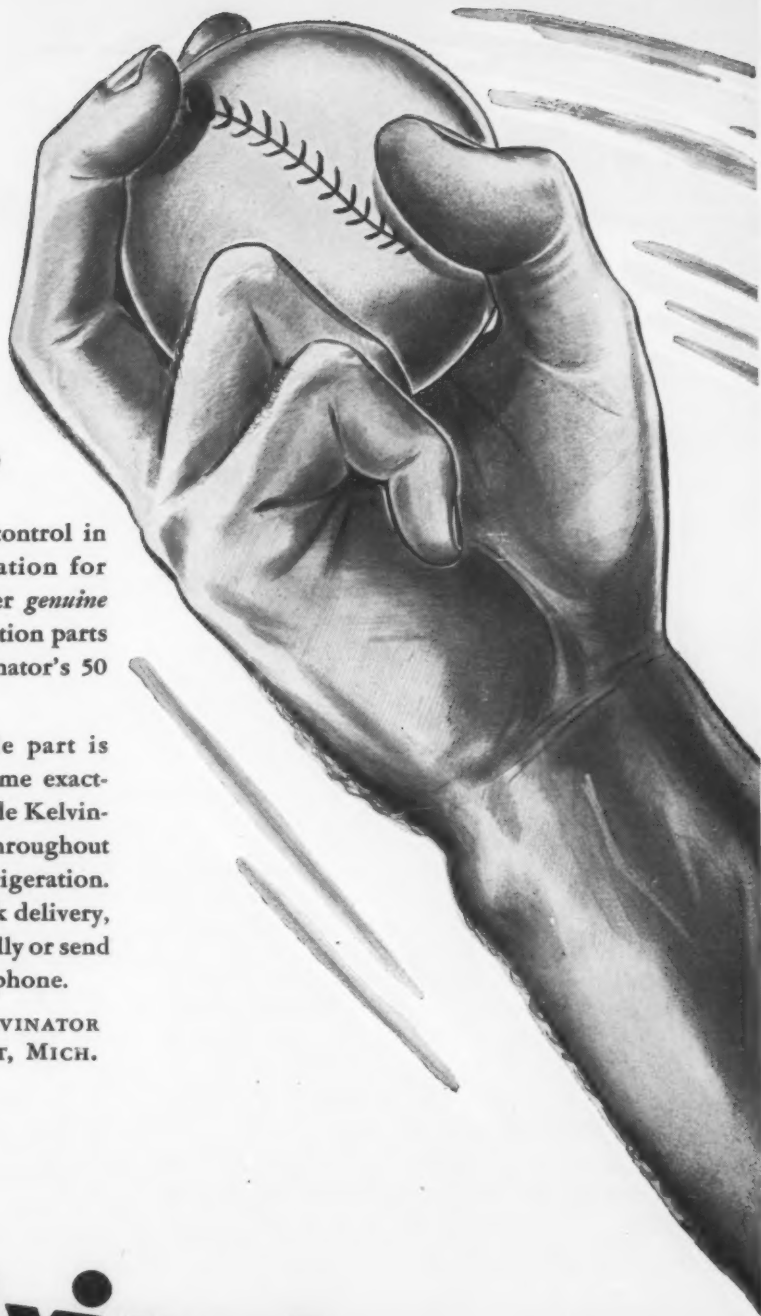
**BUY FROM YOUR
REFRIGERATION WHOLESALE**

Perfect Control...

Yes Sir . . . for perfect control in maintaining your reputation for quality repair work, order *genuine* Kelvinator-made refrigeration parts from the nearest of Kelvinator's 50 parts depots.

Every Kelvinator-made part is manufactured with the same exactness and care that has made Kelvinator products *dependable* throughout more than 30 years in refrigeration. They're available for quick delivery, too; either stop in personally or send in your order by mail or phone.

DIVISION OF NASH-KELVINATOR
CORPORATION, DETROIT, MICH.



Kelvinator



CONDENSING UNITS OPEN AND SEALED



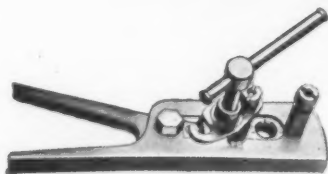
faster on the DRAW!

It's tough sledding to find copper tubing with all the advantages of 'Superior'. Manufacturers and service men know that 'Superior's' fine quality means product advantage, a very important factor in the highly competitive market of today. The slyer buyer always chooses 'Superior' for it is 4 ways better - - it is seamless as a tube should be, clean and bright as a new copper penny, easy bending as youth, and dry as a bone.

Available in straight lengths or coils 1" (o. d.) to capillary 093" (o. d.)

Be a forerunner in your field - - be faster on the draw - - write today for further information and colorful literature.

PENN TUBING IS "SUPERIOR"



THE FLARING TOOL
"that works like sixty"

The Papco #400 is a compact flaring tool that holds six sizes of tube and gives you a quicker, easier and better flare. Send for Bulletin.

GET YOURS NOW

PENN

BRASS & COPPER CO.

ERIE, PENNSYLVANIA • Phone 35-111

New PRODUCTS

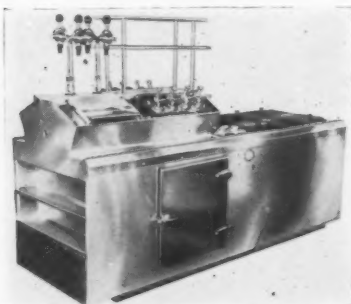
For further information on any of these products, simply list the key number at the head of each item on the special post card enclosed with this issue.

Soda Fountain • • • • P-124

Product: 100% creamer of center aisle type.

Manufacturer: Ace Ice Cream Cabinet Corp., Bronx, N. Y.

Features: One of two types of new soda fountains added to the Ace line, this 100% creamer is being manufac-



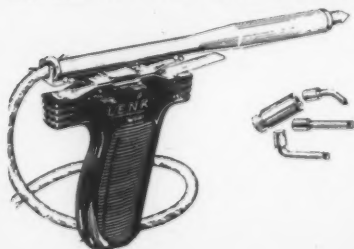
tured in four models providing 20, 30, 40, and 50-gallon ice cream capacity. Bobtail fountains are being manufactured in three sizes: 5-foot with two sink compartments, 6-foot with three sink compartments, and 7-foot with three sink compartments. Both lines of fountains are of the center aisle type.

Soldering Iron • • • • P-125

Product: "Gun-grip" soldering iron.

Manufacturer: Lenk Mfg. Co., Boston.

Features: Gun grip, light weight, and balanced construction facilitate



handling. Weighs approximately 1/2 pound. Special mounting technique cushions pressure for delicate work. Built-in safety stand. Handle is of plastic; metal parts are finished in chrome. Each iron packaged with four tips—a straight, a 45° break, a 90° break, and a heavy-duty tip.

Valve Grinding Kit • • P-126

Product: Self-aligning valve grinding kit.

Manufacturer: Premier Co., Baltimore, Md.

Features: Contains abrasive wheels and lapping discs for valve ports 1/2 to 1 1/4 inches in diameter. Also includes two 3-inch cast iron



lapping blocks for lapping flat surfaces. In addition to the lapping equipment a valve testing device is included to permit testing the valve before it is again put back into service. Abrasive and lapping wheels can be used by chucking into a regular drill press or, because of the self-aligning feature, they may be successfully used with a portable electric drill. Complete kit comes in a hinged and felt-lined wood case with complete instructions for reconditioning both recessed and flush seats in discharge valve plates and pistons.

Motor Brush Kit • • • P-127

Product: Kit No. 4, containing an assortment of brushes for refrigerator motors.

YOU'LL FIND
Eston
REFRIGERANTS
ARE BETTER!



Distributors of
FREON 11-12-22-113

Years of use in all types of refrigeration equipment have proven Eston refrigerants are superior. All are of sustained high quality with exceptionally low moisture content. Servicemen say Eston refrigerants give better performance and more efficient operation. Eston jobbers are conveniently located. Write for complete information.

*In the West it's
Eston for Refrigerants*

Eston
CHEMICALS, Inc.
3100 East 26th Street
Los Angeles 23, Calif.

Manufacturer: Pure Carbon Co., Inc., St. Marys, Pa.

Features: Kit contains 142 brushes of 19 separate sizes and styles. With a little sanding, a brush from this kit will fit 90% of all refrigerator motors. Kit constructed of heavy metal-edged cardboard to withstand rough usage. Each type of brush comes in a separate, removable, metal-edged box. Lid contains a permanent chart for easy location and recording of specific items. Designed to be taken right along on service calls.

Cabinet-on-Wheels • • • P-128

Product: Frigid-Freeze "Spot Special" cabinet on wheels.

Manufacturer: Refrigeration Corp. of America, New York City.

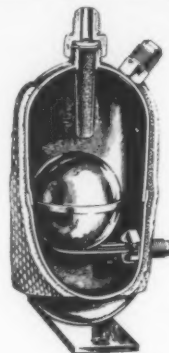
Features: A low-temperature sales and display cabinet mounted on wheels in order to make it completely portable so as to take full advantage of in-store traffic in promoting sales of frozen foods and ice cream. Open type self-service cabinet has capacity of about 250 pounds of food. Cabinet measures 46½ inches long, 29¾ inches wide, and 37¾ inches high.

Oil Separator • • • • P-129

Product: "Sep-Return" automatic oil separator and return.

Manufacturer: Wabash Mfg. Co., Chicago.

Features: Steel shell insulated with heavy sheet asbestos. Top and bottom halves of shell are joined by silver brazing after assembly of float



mechanism. In operation, oil-laden hot refrigerant gas from compressor enters separator and flows through a Poronze element which causes the oil to separate from the gas and trickle into the sump. Gas, now free of oil, leaves separator and returns to condenser. List price about \$8.

Cooling Tower • • • • P-130

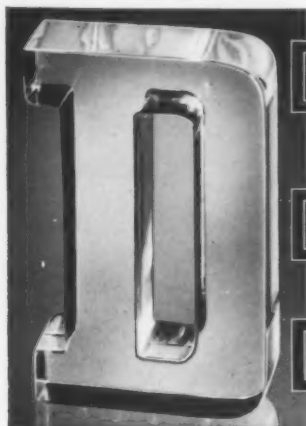
Product: "Aquatower" packaged cooling tower.

Manufacturer: Marley Co., Inc., Kansas City, Kansas.

Features: Compact cooling tower with high performance rating. Com-



pletely assembled at factory, this unit is delivered as a packaged product ready for operation. Designed with standard components, without special pumps or motors. Engineered for in-



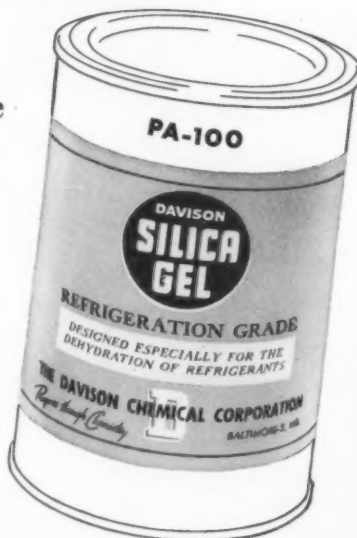
Davison PA-100 *the* Dependable Desiccant

in the can with the
familiar blue label

You can depend on it to do a complete, fast job of removing moisture. That's why Davison Refrigeration Grade Silica Gel is the standard drying agent with service men who know.

Always ask your jobber for "Davison" . . . in factory-charged dehydrators or in bulk.

"9 out of 10 prefer DAVISON"



THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry



BALTIMORE-3, MD.

PIONEERS AND DEVELOPERS OF SILICA GEL

Canadian exclusive sales agents for DAVISON SILICA GEL:

CANADIAN INDUSTRIES LIMITED, General Chemicals Division

door or outdoor service. Sized from 3 to 15 tons of refrigeration. All component parts readily accessible for servicing. Sturdy fan guard insures safe operation.

Fittings Display Case • • P-131

Product: Kit for stocking and display by wholesalers of a complete range of "Everseal" self-flaring fittings.

Manufacturer: Everhot Products Co., Chicago.

Features: Two-drawer all-metal display cabinet with 64 separate compartments for housing the new No. E320 assortment of Everseal self-flaring fittings. This assortment con-



sists of 687 sizes and 12 different types of fittings. Inside top cover of each kit contains an easily read listing of fitting part numbers, quantities, and list prices. Plastic divider keeps fittings dust free and saleable at all times.

Bottle Type Cooler • • P-132

Product: Bottle type electric water cooler.

Manufacturer: Ebco Mfg. Co., Columbus, Ohio.

Features: Oasis model OB-4, adaptable for cup service in offices, stores, hospitals, etc. Cabinet finished in brown opalescent lacquer of bonderized steel, welded construction. Front panel removable for access to condensing unit. Perforated corner grilles in front panel afford cross-ventilation to condensing unit. Top is of brown vitreous enamel on steel, with black molded rubber bottle gasket. Will serve 80 persons per hour; stainless steel storage tank holds four quarts of cooled water.

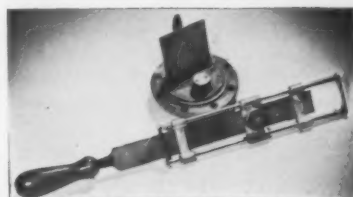
Float Reseating Tool • • P-133

Product: "Watco" float reseating tool for reseating low side float needle valve on any Frigidaire unit.

Manufacturer: Wagner Tool & Supply Corp., Long Island City, N. Y.

Features: Small in size, foolproof in operation, does job in one minute. Tool consists of a mill file clamped in a frame which slides back and forth in a bed. Cast as an integral part of bed is a sleeve which is drilled and finished so that its inside diameter is exactly the size of the Frigidaire float needle seat. This sleeve is cupped

over needle seat, holding file parallel to face of seat. A few passes of the file resurfaces needle seat accurately. May be used on job, as not even a vise is required. Priced at \$7.50 complete with file and directions.



**"STAINLESS"
IS STANDARD
IN ALL
TEMPRITE
BEER COOLERS**

Temprite beer coolers are jam-packed with sales features! Latest improvement on the fast-selling Temprite cooler is smooth, clean stainless steel coils... non-porous coils that draw clear, tasty beer from the first day of use... without waiting for beer stone to form.

Complete with valves. Only 2 cooler refrigeration connections required. Small, compact, highly efficient Temprite beer coolers provide trouble-free operation... greatly reduce service costs.

Get next to Temprite profit possibilities! Write us now for details. It's time to cash in on a big draught beer cooler season!

IN CANADA: Refrigeration Supplies Co., Ltd.
1127 Dundas Street, London, Ontario

TEMPRITE PRODUCTS CORP.

Originators of Instantaneous

80° 40°

Liquid Cooling Devices

41 PIQUETTE AVENUE

DETROIT 2, MICHIGAN

MARINE REFRIGERATION . . .

Continued from page 31

the rooms through which the Freon piping passes, a serious explosion might result.

Every unit is cross-connected so that any unit can pull on any load. The liquid lines, suction lines, overboard discharge lines, and the water lines to the condensers, are all interlocked. There isn't enough pump-down capacity to hold all of the refrigerant for any one system in its

own receiver. If a section of the plant has to be opened for repairs it is possible, by means of this inter-lock system, to transfer the refrigerant to any part of the system.

The refrigerated cargo spaces occupy all of one hold of the ship and are on four levels. (That's equivalent in height to a four story building.) There are two rooms on each level and the partitions run fore and aft at the center line. The rooms are ranged around the center of the hold. The center portion of the hold is taken up by the hatch opening, about

25 feet square, through which the cargo is loaded. Between the hatch and the inboard walls of the rooms is a loading gallery about 10 feet wide. There are wooden panels, or hatch covers, to cover the hatch opening and to use as a loading platform. After the refrigerated cargo is loaded the center of the hold is used for dry cargo stowage.

Blower Arrangement

The blower coils are located in one end of each room. Access to the coil room is by means of a small door which is accessible at all times. Most of the rooms are "L" shaped and the air from the blowers is distributed throughout the rooms by a system of ducts. The suction for the blowers is taken inside the rooms, but provision is made to take part of the air from outside the rooms when fruit and vegetables are carried. If fresh air is not introduced at regular intervals to displace the foul air that is generated by the decomposition of the fruit and vegetables, the cargo may be discolored and, in extreme cases, badly damaged.

The blower coils are equipped for water defrosting. The discharge water from the condensers is diverted to a pump and is brought under pressure to the defrost water piping over the coils. This water leaves the condensers at from 90 to 95 F, and provides an ever available source of warm water for defrosting.

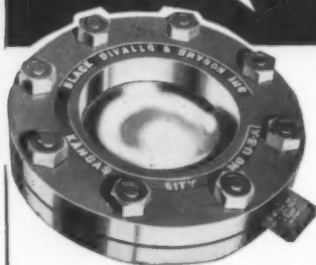
The suction and liquid line manifolds are located just outside the rooms in the hatch area galleries. The control manifolds are so constructed that they can operate the rooms at either zero or 35 F without much effort by the operator. Each liquid line is equipped with two expansion valves, one with an orifice for zero operation, and one for 35 F operation.

Control Setup

Each room is equipped with two room thermostats to control the liquid line solenoid valve. One is set to cut it out at zero, and one is set to cut it out at 35 F. The change can be made by throwing a switch in the machinery room. For 35 F operation the suction goes through a constant pressure valve; for zero operation it goes through the by-pass. Telling about all these gadgets makes the system sound pretty complicated. Actually, once the operator becomes acquainted with

EMERGENCY PROTECTION! AGAINST OVERPRESSURE IN REFRIGERATION UNITS

BS&B SAFETY HEADS



Protect receivers and
tubing from rupture
... Save compressors
from destructive
overpressure!

● Overpressure can rupture receivers, copper tubing . . . even compressors when control valves fail. SAFETY HEADS offer emergency protection . . . a positive margin of safety that will prevent accidents and costly equipment losses. No other device can approach the relief capacity of a SAFETY HEAD in a given diameter!

The simple rupture diaphragm is guaranteed to burst within five percent of specified, pre-determined pressure. A size for every need . . . up to 25,000 psi . . . tailored to fit. No working parts. Burst diaphragms quickly, easily replaced.

Thousands in Use!

Plant owners all over the world rely on SAFETY HEADS for complete emergency protection. Put them to work for you! Write today for complete information and specifications. Address the Special Products Division, Black, Sivalls & Bryson, Inc., Power and Light Building, Kansas City 6, Missouri.

FOREIGN INQUIRIES INVITED

EFFICIENCY

Cable Address: BLACK, KANSAS CITY, U.S.A.

BLACK, SIVALLS & BRYSON, INC.

KANSAS CITY, MO.
CASPER, WYO.

RELIABILITY

OKLAHOMA CITY, OKLA.
CALGARY, ALTA.

the plant, it is fairly simple.

In addition to the cargo refrigeration plant there is another for the ship's stores. This plant has a Carrier 7 H 6 unit and pulls on a vegetable room, dairy room, ice storage room, icemaker, fish room, and meat room. There are also several self-contained water coolers, domestic boxes, reach-in boxes, etc.

A ship of this type carries an operating crew of four men, one chief operator, and an assistant for each watch. The chief works days, but is subject to call at all times. He has full charge and full responsibility. Wages for these jobs are very good.

A chief operator receives from \$240 to \$300 per month. The assistants receive from \$180 to \$240 per month. Salary depends on the type of ships. When you consider that these jobs include board and room, and a chance to see the world, it seems like a pretty good deal.

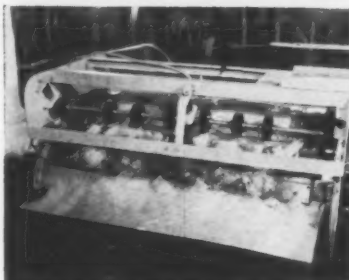
Fish Boat Cooling

Refrigeration for commercial fishing boats is one of the brightest spots in the whole marine field.

Up until about ten years ago only a

few fish boats carried any refrigeration at all. They depended entirely on the ice they could carry. Since their cruising range was limited by this factor, their scope of operation was likewise limited. In most cases they could not stay out longer than about 10 days or two weeks. Then

CONTINUOUS ICE MAKER



Here is one of the continuous ice making units being produced by Belt Ice Corp., Seattle. Units are available in capacities from 1 to 7½ tons of ice daily, for use with ammonia, and in ½ and 1 ton capacities for use with Freon. Four of the largest units have recently been installed in the plant of Halibut Liver Oil Producers, Seattle; a number of smaller units are serving dairies and fish packing plants in the area, according to F. W. Knowles, president of Belt Ice Corp.

a few boats started installing enough refrigeration to help hold the ice. This extended the time they could stay out to about thirty days, but it was not altogether satisfactory.

Just before the war a few fully refrigerated fish boats of the large "Tuna Clipper" class were built and they worked out very well. With this equipment they could stay out as long as their fuel lasted, which might be anywhere from two to four months, depending on the amount of cruising done. The war stopped all this sort of work, but since V-J Day a lot of these fishing boats have put in refrigeration plants. The field is still wide open.

It has been estimated that there are more than 2000 commercial fishing boats out of Pacific Coast ports. At the present time not more than 5% of these boats have refrigeration. It is highly improbable that all of these fishermen will go for refrigeration, but if 40 or 50% of them do it adds up to a lot of equipment and a lot of installation jobs.

Time and space will not allow a thorough examination of all the problems involved in this type of refrigeration.

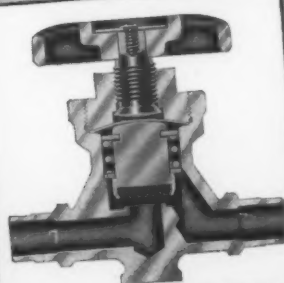
NEW *Life-Time* DIAPHRAGM PACKLESS VALVES



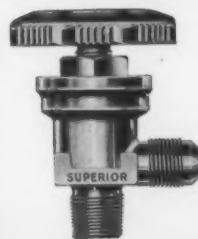
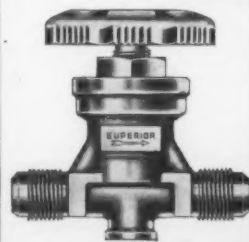
10 FEATURES OF SUPERIORITY—Check them!

- 1—Rugged—pleasing appearance—symmetrical design.
- 2—Wrench pads for individually tightening flare connection.
- 3—Unique solder connections permit soft or silver soldering—without removing internal assembly.
- 4—One-piece, plated lower stem.
- 5—Controlled stem travel assures "Life-time" diaphragm performance.
- 6—Controlled seating results in "Life-time" operation.
- 7—Large bearing surfaces—polished stem heads, and scientific lubrication assure "Life-time" performance of upper stem and diaphragm.
- 8—Unrestricted flow—ease of operation.
- 9—Operates under normal pressure, with flow in opposite direction.
- 10—No special tools required for disassembly or reassembly.

Ask Your Jobber About "Life-time" Packless Valves
They're SUPERIOR!



Line, Branch and Angle Types



Superior Valve and Fittings Co.

1300 WEST LIBERTY AVE. PITTSBURGH 26, PENNA.
OFFICES IN PRINCIPAL CITIES STOCKS: CHICAGO (A) LOS ANGELES (15) JOBBERS EVERYWHERE

ation, but the pictures will give some idea of the nature of the work and the engineering problems involved. At the present time the existing installations are about equally divided between Freon-12 and ammonia. There seems to be no conclusive evidence that one is better than the other. However, some operators claim that ammonia plants deliver more refrigeration effect per pound of equipment.

The greatest problem in these installations is to find space for the equipment. The engine rooms already

have so much machinery in them that it doesn't seem possible that another thing could be added. These boats are all Diesel driven, so it is necessary to put in two additional Diesel driven generators to drive the refrigeration motors.

By rearranging all of the existing machinery except the main propulsion unit, it is possible to make the installation, but great care must be taken to see that the trim of the ship is not disturbed. These little ships are usually less than 100 feet long,

and the trim is very critical. If the new equipment does not maintain this trim it has a bad effect on the maneuverability and sea worthiness of the ship. However, it can and is being done by several Pacific Coast contractors.

This will give you a rough idea of what goes on in marine refrigeration. In common with all refrigeration equipment, it is prone to break down occasionally. There are opportunities in this work for everyone connected with the refrigeration industry.

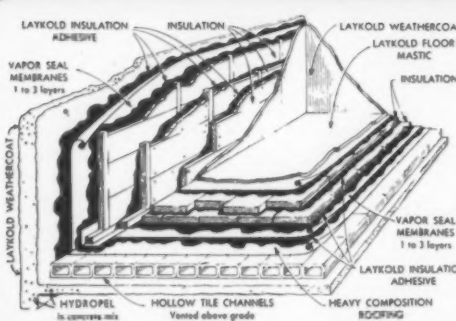


for **DEPENDABLE SERVICE**

QUICFREZ
The PIONEER of Farm Locker Plants — Now Ready for Immediate Delivery. Place Orders NOW.

SANITARY REFRIGERATOR CO.
FOND DU LAC, WISCONSIN
Farm Locker Plants Since 1939, Ice Refrigerators for More Than 40 Years





5
Laykold
PRODUCTS
for
COLD INSULATION

CONTRACTORS like the COLD application — lower labor cost.
OWNERS like the complete vapor-seal — lower operating cost.

INSULATION ADHESIVE — spray wall — let set — apply membrane. Spray overlaps and press down — **TIGHT ADHESION**. Spray membrane and insulation blocks, install. Easier, **FASTER**, complete seal with brush or spray.

HYDROPEL — cold liquid admix greatly reduces moisture absorption by concrete walls and floors.

FLOOR MASTIC BINDER — to mix with aggregates for cold-laid mastic floor. Ideal for cold rooms — waterproof, resilient, noiseless, light-weight — withstands traffic.

WEATHERCOAT — odor-proof seal for face of block insulations. To waterproof exterior concrete or brick walls. Trowel, brush or spray.

REFRIGERATION BINDER — to mix with cement and sand for smooth plaster finish on walls — with Lumnite cement for wet-wall adhesive.

Try Laykold COLD Asphalts on ONE job — cut your labor costs — please your customers.

Ask our nearest office for literature, specifications, prices.

BALTIMORE 15, MD.
PROVIDENCE 14, R.I.
PERTH AMBOY, N.J.
COLUMBUS 15, O.
ST. LOUIS 17, MO.

AMERICAN BITUMULS COMPANY
200 BUSH STREET • SAN FRANCISCO 4, CALIF.
WASHINGTON 6, D.C.

OAKLAND 1, CALIF.
LOS ANGELES 15, CALIF.
TUCSON, ARIZ.
BATON ROUGE 7, LA.
SAN JUAN 23, P.R.

THE LAW LENDS A HAND . . .

Continued from page 40

faucet. The condensing unit is operated by its own pressure control.

Lines from the beer keg to the Temprite coil are of block tin. The Temprite unit is connected to the faucets by special restrictor lines.

In addition to the draft beer cooling system, DeKubber & Lockwood also provided the tavern with a refrigerated back bar by installing in this back bar three fin coils from an old bottle box formerly used by the tavern and connecting these coils to a 1/3-hp Merchant & Evans condensing unit located in the basement.

Since these refrigeration improvements have been made the tavern's business has more than doubled, Mr. Czubak reports, and has developed into an all-day trade rather than being concentrated in a few peak periods. Even Messrs. DeKubber & Lockwood drop in more frequently now!

SALES of home-type freezer cabinets would be greater with additional cooperation from manufacturers, according to appliance buyers in Sacramento, Calif., major stores.

Salesmen and store buyers agree that a general educational campaign on a nationwide level explaining to the public the advantages of frozen food cabinets would aid local sales.

Another suggestion of store personnel is that pamphlets or instructions on the technical details of individual freezers as well as general tips on the preparation and storing of frozen foods should be widely distributed as well as attached to each unit. Salesmen claim that on most models, they do not have even basic information, such as temperature ranges.

PERCENTAGE-WISE . . .

Continued from page 45

obtain general service work outside this selected clientele except where the opportunity of a new equipment sale presented itself.

By the time 1943 rolled around Mr. Haaser found that he had outgrown his back yard setup, so he rented an old barn nearby and moved his service business there. In addition, he started in to build home and farm freezers to satisfy a limited demand for this type of equipment which he had encountered in the course of his service work.

All in all he built about 50 of these freezers. He assembled them from the ground up, arranging to have fabricated for him those parts which were too difficult for him to make. He powered these freezers with any kind of a condensing unit he could get his hands on, providing they were of adequate capacity. Some of these condensing units were used machines which he completely rebuilt himself in order to assure satisfactory performance. Other materials he obtained by searching out surplus stocks and exhausting all other possible sources. But despite this "patch-work" method of procurement he never cut corners on quality, and as a result virtually all of the freezers he constructed are still in service.

He Likes Selling

This start in the freezer business convinced Mr. Haaser that the merchandising business was for him. So in May of 1945 he moved out of the barn and into the building in which he is presently located, and blossomed out as a full-fledged commercial equipment dealer.

This building in which the firm is now housed is a one-story, 30x90-foot, brick-front structure with double display windows which Mr. Haaser rents from his brother, who owns this building as well as the beer business.

Once established in his new quarters, Mr. Haaser pitched right in to do a real job of selling. But a lot of things didn't work out quite the way he had planned, and the rest of that year was pretty tough sledding. As a result, he finally wound up 1945 with gross sales of only about \$10,000.

The following year, however, he

really caught on, and then it was a different story, as the 1946 sales and profit figures already quoted go to prove. And there's been no let-up since, for preliminary figures for the first six months of 1947 show gross sales of 38,404, a healthy increase over sales for the same period of 1946. In fact business this year has been so good that since February Mr. Haaser has had a young Navy veteran, Richard Lease, helping out with the service end of the business. This has left "the boss" free to devote himself more fully to an intensified merchan-

dising campaign.

The Haaser firm handles a complete line of commercial refrigeration equipment for "packaged" installations up to and including walk-in coolers of any reasonable size which Mr. Haaser is prepared to construct and equip himself. He shys away, however, from the larger, more complicated, engineered type of applications. Among the many brands of equipment handled, the company is county-wide distributor for Tyler, Sherer-Gillett, and Amana.

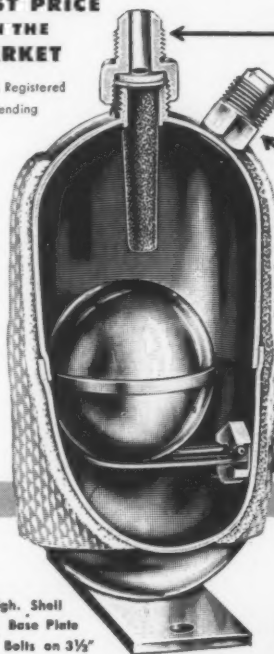
Equipment sales constitute about

SEP-RETURN

AUTOMATIC OIL SEPARATOR AND RETURN

LOWEST PRICE
ON THE
MARKET

*Trade Mark Registered
Patent Pending



Oil-laden hot refrigerant gas from the compressor enters the SEP-RETURN. The gas flows through the Poronze element which causes the oil to separate from the gas and trickle into the sump. The filter-separator is easily cleaned.

The gas now free of oil leaves the SEP-RETURN through this exit port on its way to the condenser.

Steel shell of SEP-RETURN is insulated with sheet asbestos cover to improve efficiency.

Top and bottom halves of shell are joined by silver brazing after assembly.

When enough oil accumulates in sump, float ball raises and opens needle valve permitting oil to return to compressor crankcase.

7 1/2" High, Shell
3" Dia. Base Plate
for 1/4" Bolts on 3 1/2"
Centers.

Inlet and Outlet 1/2" SAE. Oil
Return 1/4" SAE. For Use on
Systems Up to one-third H.P.

No. 400 \$8.00
List Price

SEP-RETURN* PAYS FOR ITSELF

This amazing SEP-RETURN unit is easily installed and pays for itself in a matter of months by reducing the electric power bill and providing more efficient refrigerating. On new jobs the SEP-RETURN makes it possible to use smaller compressors.

IT SAVES MONEY—IT MAKES FRIENDS

WABASH

MANUFACTURING CO.
2642 S. MICHIGAN AVENUE
CHICAGO 16, ILL.

WHICH are your best TOOLS?



Photo courtesy of The Marlin Firearms Co.

GOOD mechanics may argue about their favorite tools—but there's no argument about the fact that YOUR HANDS are the most precious of all! Keep those "educated" hands of yours in condition—keep them QUICKEE-CLEAN! QUICKEE removes grease—grime—paint—tar—glue in 17 seconds flat...without water! What's more, it's kind to your hands...contains Lanolin. KEEP QUICKEE HANDY ON THE JOB...FOR MORE AND BETTER WORK!

Send for FREE SAMPLE



QUICKEE
WATERLESS
HAND CLEANER

TUDOR CHEMICAL SPECIALTIES, INC.
Tudor Bldg., New York 53, N.Y.

GRUNOW AUTHORIZED DEALERS ARE MAKING MONEY!

Build up your new
box sales now with
Grunow Service
Business!

Write for Grunow
Authorized Service
in your territory.

GRUNOW
AUTHORIZED SERVICE, INC.
4313 W. Fullerton Ave., Chicago 39, Ill.

90% of the company's business, only about 10% of total revenue being derived from service work. Mr. Haaser still follows his old policy of handling service work only for his own equipment customers, except when he is fairly certain that a service call can start a prospect well on the road to becoming an actual customer.

Mr. Haaser believes wholeheartedly in the importance of keeping his customers satisfied and in backing up to the limit the products which he sells. In line with this program he thoroughly tests every unit before it is delivered, and has even gone so far as to devise some special equipment for this purpose. In the long run he feels that this policy will save him money by saving him the expense of needless service calls. As further proof of his desire to keep his customers happy, Mr. Haaser on his own initiative offers a full year of free service on any product sold which is not covered by a manufacturer's warranty.

For delivery purposes Mr. Haaser uses a platform type trailer which he attaches to the rear of his personal car. To simplify handling of some

of the heavier units he has designed a special skid which he uses in loading the trailer.

Clever and consistent promotional touches, instigated both by Mr. Haaser and his wife, also have aided materially in building the company's business.

For instance, the firm makes good use of imprinted advertising novelties such as key holders and books of paper matches, which are distributed gratis wherever the Haasers think they will do the most good. Hundreds of these books of matches, imprinted with the firm name and a brief advertising message for some of the products handled, are distributed each year at the exhibit which the Haasers maintain at the county fair. Here the firm becomes even more of a family affair, because the match books are passed out by the two Haaser children posted at either side of the firm's booth.

An even more pointed reminder of the products and services offered by the Haaser firm are the small glass-encased thermometers, imprinted with proper food storage temperatures, which are presented to every customer who buys a piece of refrigeration equipment. These thermometers too, of course, carry the Haaser name, address, and phone number.

Farm Freezer Tie-In

Tying in with their home and farm freezer sales program, the Haasers also carry a complete line of locker supplies such as wrapping paper, tape, and rubber stamps. A complete food packaging kit is given free to each home freezer customer, along with instructions on the use of these materials. Mrs. Haaser will even give the customer a complete demonstration of packing procedure right in the store, if so desired.

When it comes to advertising, the Haasers place their faith implicitly in the classified columns of the local newspaper and in persistent plugging by direct mail.

When they first started in business they splashed heavily in display newspaper advertising, but they soon decided that this type of program definitely was not worth the money which it cost. So they started placing frequent insertions in the "Miscellaneous for Sale" section of the classifieds, and began getting an immediate

CUT YOURSELF IN— ON BIGGER PROFITS

Uninterrupted power for lighting and refrigeration is too important to take for granted. Protect your plant with a WITTE Dieselectric Plant. Its reliable performance will be a constant satisfaction in itself and you will have even greater satisfaction when you figure added profits it brings in. Fuel cost averages as little as 1¢ per kilowatt hour.



10 KVA WITTE Dieselectric Plant With Constant Voltage Generator



7.5 KVA WITTE Dieselectric Plant

Full Diesels, WITTE Dieselectric Plants start and operate on low-cost Diesel fuel. Produce no dangerous exhaust gases—are safe for installation in confined places. Occupy little space, require little care. Write for newest descriptive WITTE literature.

Get a WITTE DIESELECTRIC PLANT

Trade Mark Reg.

Produce Unfailing Power
and Light at LOW Cost!

WITTE ENGINE WORKS

DIVISION OF OIL WELL SUPPLY COMPANY UNITED STATES STEEL CORPORATION SUBSIDIARY
KANSAS CITY, MO. U.S.A.

and encouraging response. They have found that people really read these "for sale" classifieds, especially in a town the size of Fremont, and so they now insert one or two ads daily.

In addition to this newspaper advertising, maximum space (which is now 1/4-page) is taken in the local telephone directory as a matter of



course. Similar display advertising is used in the city directory.

Direct mail also is relied upon heavily as a sales stimulator and as a means of keeping the Haaser name constantly in the minds of both customers and prospects.

In addition to sending out the literature made available by the various manufacturers whose lines they handle, the Haasers have developed a highly individualized series of mimeographed penny postcard promotions featuring cartoon-type sketches and an informal paragraph or two of typewritten copy on one or more of the company's products. Copy is brief, breezy, and—judging from the returns which it pulls—effective. These postcard promotions are really Mrs. Haaser's department, for it is she who draws the sketches and writes the copy for them.

Another type of postcard mailing effectively used consisted of a check list for motor lubrication, with space provided for a specific check of each date of oiling, either at 3-month or 6-month intervals as recommended by the manufacturer. These were sent out to every one of the firm's customers as a continuing reminder of the Haasers' desire to serve their refrigeration needs.

All of this may sound like a lot of work for a one-man (and one-woman) operation. And it is. Mr. Haaser will be the first to verify that. "Don't

think for a minute that it has been easy," he warned. "And whatever you do, please don't delude any newcomers in the field into thinking that just because we have done so well that the commercial refrigeration sales business is a soft touch. It definitely isn't.

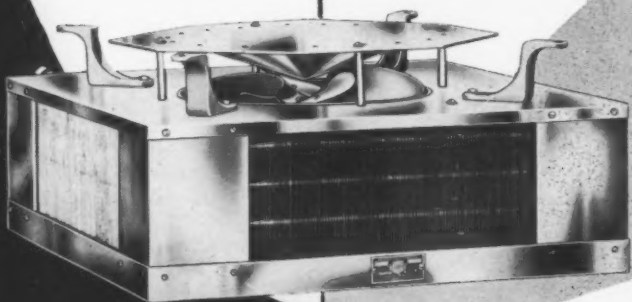
"We think we have a pretty good record," he continued with justifiable pride, "but that record has been achieved only at the cost of a lot of long, hard work. Twelve hours a day actually devoted to the business has been the rule, rather than the excep-

tion, for me. But looking at the balance sheets I'm convinced that it has been worth it."

Yes, Harry Haaser has come a long way in the short time that he has been on his own as a commercial refrigeration dealer—and here's another clue as to how he has managed to make such commendable progress. Pinned up on the wall of his sales floor office is this axiom: "If what you did yesterday looks pretty big to you, then you haven't done much today." And Mr. Haaser didn't put that there just for other people to read.

"RECORD" Supreme COIL

THE IDEAL UNIT
FOR MEAT AND
FLOWER STORAGE



HI HUMIDITY

LOW VELOCITY

Like all other coils in the complete "Record" line, the Supreme "Circle-Air" coil has been engineered to do a special job. It is the perfect coil for fresh meat and flowers or any application where high humidity and low air velocity are essential for perfect results. This coil discharges a complete circle of air into all four corners of the cooler. Write today for complete engineering specifications.



**REFRIGERATION
ENGINEERING, INC.**

7250 East Slauson Ave., Los Angeles 22, Calif.

Maximum EFFICIENCY Minimum ATTENTION



Precision manufacture gives Larkin refrigeration products life-time top performance and lasting fortitude. Made by the originators of the patented Cross Fin Coil, Larkin is the recognized

leader in precision manufacture of Larkin Humi-Temp Forced Convection Units—Bare Tube and Zinc Fused Steel Plate Coils—Air Conditioning Units—Instantaneous Water Coolers—Evaporative Condensers—and all other equipment factors used in dependable commercial and industrial refrigeration.

THE WATCHDOG OF THE
NATION'S FOOD SUPPLY



LARKIN COILS

519 MEMORIAL DRIVE-S.E.
ATLANTA • GEORGIA

AIR DISTRIBUTION . . .

Continued from page 34

to replace grilles at the duct openings, the required temperature and humidity were closely maintained throughout the room even though air changes were substantially increased.

When cold air enters a room through conventional duct outlets—grilles, registers or perforated panels—it usually sweeps to the floor and forces the warmer room air to the ceiling. Until the velocity of the cold incoming air subsides, it cannot mix with the warmer room air. This results in a room filled with drafts and turbulent air. Temperature differentials are great throughout the room, humidity is unequalized, and stagnant air pockets are prevalent.

In the plants previously mentioned, such unsatisfactory conditions were rectified by installing a patented device known as the Anemostat air-diffuser. This device is composed of a series of scientifically designed metal cones assembled in definite relation to each other.

Air entering a room passes through

these cones and, because of their unique design, is instantly reduced in velocity within the device. Simultaneously, air from the room—equal to about 35 per cent of the incoming air—is siphoned into the diffuser where it is mixed with the incoming air. The pre-mixed air then leaves the Anemostat at a low velocity and spreads over a pre-determined area above the occupancy zone before slowly entering that portion of the room.

It might be said that the air mix-

CONVERSION of four former army maintenance trucks into traveling sheet metal shops has speeded up air conditioning and heating installations for Indiana Tempered Air, Inc., Chrysler Airtemp dealer in Indianapolis, and has reduced installation costs.

Standard sheet metal fittings are made in the dealer's shop and hauled to the job in the trucks. The truck crew then manufactures all special fittings, makes any alterations that are necessary, and completes the installation without further call back to the main shop. When one installation is complete, truck and crew move on to the next job without having to return to the main shop.

Complete cost of outfitting the trucks, which were purchased from Army surplus, was figured at \$2,100. Trucks are equipped with power tools as well as hand tools, and each carries a 100-foot extension cord to carry power from any standard electrical outlet.

Your BEN-HUR Dealer

...WORKING
PARTNER TO A
GREAT
INDUSTRY

The dealer who holds the franchise for BEN-HUR FARM AND HOME FREEZERS in any community is the working partner in a great industry. He is an important part of one of the nation's progressive and most reputable manufacturers of home freezers . . . an organization backed by over 35 years of success. He sells BEN-HUR Farm and Home Freezers with complete confidence in the knowledge that they reflect the finest of advanced engineering knowledge and skilled craftsmanship—and are daily proving this heritage in thousands of homes everywhere.

It is natural that BEN-HUR dealers themselves measure up to only the highest



standards in each community, and their appointment is recognition of their reputation as good businessmen. Each is backed with all the power of National Advertising, sales promotional and merchandising assistance that will carry BEN-HUR FARM AND HOME FREEZERS into high-volume, profitable sales to a long list of satisfied customers. Look into the BEN-HUR Line for steadier income and lasting customer good will.

BEN-HUR MFG. CO.

Dept. B, 634 East Keefe Avenue
Milwaukee 12, Wisconsin
CONTINUOUS MANUFACTURING SINCE 1911

BEN-HUR

FARM and HOME FREEZERS

ture then "settles" into the room instead of "sweeping" in, as it does when conventional fixtures are used at duct openings. Therefore, obstacles such as columns, machines and furnishings do not deflect the airflow. And stagnant air pockets—whether under-cooled or over-cooled—are eliminated.

The over-all result is even, draftless air-distribution that causes both temperature and humidity to be closely equalized throughout the room.

However, before the air can be distributed in this controlled pattern, various factors must be considered, including the area of the room, height of ceiling, design of ceiling, locations of duct openings, duct sizes, duct velocities, permissible air velocities within the room, number of air changes per hour, permissible sound levels, location of columns and other obstructions, the location, type and heat-load of lighting fixtures, location of exhaust outlets, unusual concentra-

tions of internal heat, solar radiation, and other items.

To better enable engineers and contractors to properly specify the type of Anemostat diffuser for any particular job, Anemostat Corp. has prepared the accompanying charts.

Because of the various factors involved, one single design of diffuser could not be expected to solve all air distribution problems. Therefore, Anemostats are available in different designs for different conditions. For example, of the 180 Anemostats used in a large building of the International Business Machines Corp. at Endicott, N. Y., 72 of the devices are wall-type diffusers and 108 are ceiling-type. In some parts of the building duct velocities exceed 1500 fpm, yet velocities in occupancy levels of rooms do not exceed 40 fpm.

Since these air-diffusers circulate air of the highest duct velocities in a draftless pattern, they make it possi-

scientific air distribution begins—the air distribution that makes or breaks air conditioning. And with proper application of air-diffusers, draft complaints can be converted into comfort compliments.

* * *

Editor's Note:

Mr. Phillips is a member of the American Society of Heating and Ventilating Engineers, and the New York Society of Professional Engineers. For many years he was engaged in the cold storage insulation construction business. For several years before the war he did considerable consultant work in the commercial refrigeration and air conditioning field. Since 1942 Mr. Phillips has been in charge of the research department of Anemostat Corp. of America.

MONSANTO TO PLUG SANTOCCEL NAME

To help identify Monsanto insulation in the consumer field a new trademark featuring the name "Santoccel" against Monsanto's block "M" will continue to be the main theme of advertising and promotion for this space-saving insulant, the company reports.

The advertising campaign was shifted to the trademark in expectation of large-scale production of both refrigerators and freezers insulated with Santoccel.



ble to install smaller ducts to handle larger volumes of air. Duct layouts also may be simplified because these efficient air-diffusers—when properly selected and located—thoroughly distribute the air in spite of machines, columns, and other obstacles. Small ducts and simplified layouts enable the engineer to save valuable space and reduce installation costs.

The versatility of these air-diffusers is demonstrated by the fact that nearly 1,000,000 Anemostats are now successfully operating in heating, ventilating, air conditioning and refrigeration systems of all kinds.

Air distribution does not end at a duct opening. Here, in fact, is where

NEW HAND-SIZE APPLIANCE TESTER

... for volts, amperes, watts

Here is the first appliance tester ever made that gives you volt, ampere, and wattage readings all from one small, compact instrument.

Model 390 slips easily into a large pocket, weighs only a pound and a half, is designed for hard, continuous service.

The range of uses for this volt-amp-wattmeter is almost unlimited in checking line voltage, current drain and power consumption, the three simple tests which will diagnose most cases of electrical trouble. In fact, practically any household electrical appliance that has a motor or a heating element, can be tested by the 390, as well as certain industrial installations.

You merely plug Model 390 and appliance to be tested into the Break-In plug furnished—voltage will read. To read watts or amperes, simply press one of the two buttons at bottom of the panel.

Aside from its unique features, Model 390 has no equal among appliance testers in quality alone. The famous Simpson quality makes investment in the Model 390 an investment that will return a rich yield in satisfactory service through the years.

USE MODEL 390 FOR TESTING

Refrigerators	Motors
Deep Freezers	Electric Heaters
Washing Machines	Radio Sets
Irons	Lamps
Toasters	Vacuum Cleaners

and all similar appliances.



Simpson Model 390 Volt-Amp-Wattmeter

Ranges—A.C. Current, 60 cycles.
Volts: 0-150, 0-300.
Amperes: 0-3, 0-15.
Watts: 0-300, 0-600, 0-1500, 0-3000.
Size: 3"x5½"x2½". Weight 1½ lbs.
Shipping weight 3 lbs.

Price, with Break-In plug and leads.....	\$39.50
Leatherette Carrying Case, with leads compartment.....	4.00
Genuine Leather Carrying Case, with leads compartment.....	8.00

Simpson

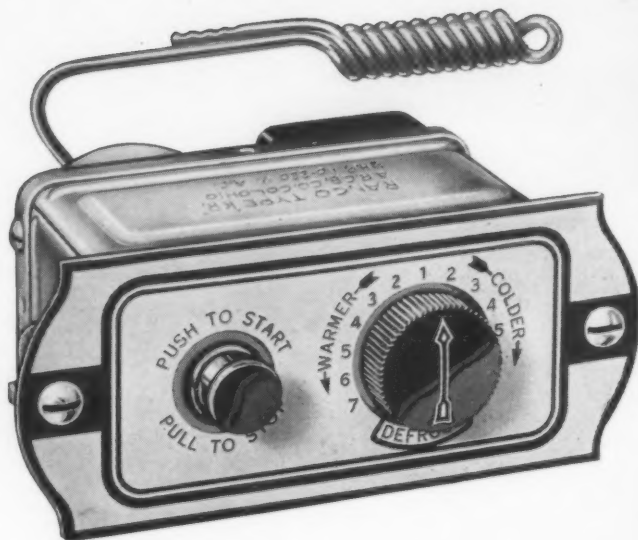
INSTRUMENTS THAT STAY ACCURATE

SIMPSON ELECTRIC COMPANY
5200-5218 W. Kinzie St., Chicago 44, Ill.
In Canada, Bach-Simpson Ltd., London, Ont.



CHECK WITH *Ranco* FIRST

	Specialists in Refrigeration
	More Ranco Controls in Use
✓	Dependability
	Less Stock to Carry
	Greater Customer Satisfaction
	More Profit for You



DESIGNED FOR DEPENDABILITY

Ask your wholesaler for complete details, or write direct to Ranco Inc. We're ready to serve you.

You can expect dependable, trouble-free service from any Ranco Refrigeration Control. Simplicity of design, the use of quality materials, precision manufacturing methods and rigid inspection through every phase of assembly are the reasons why. And those are the reasons why more refrigeration service men choose Ranco Controls—for dependable, trouble-free service. You'll please your customers and increase your profits with Ranco Refrigeration controls.

Ranco Inc.

World's Largest Manufacturers of REFRIGERATION



COLUMBUS 1, OHIO

CONTROLS

"Let's share our knowledge—exchange our experience"

Here's how

THE SERVICE MAN'S DEPARTMENT



HERE'S a little knack I stumbled across in working on thermostatic valves and controls in the refrigeration field.

When necessary to cool a power element in either a thermostatic valve or a cold control, the usual procedure is to invert a drum of Freon-12 or methyl chloride and spray the element with liquid refrigerant to cool it.

I find that a better method is to use 5 or 6 feet of $\frac{1}{4}$ " tubing attached to the drum, then a $\frac{1}{4}$ " valve with flare connections and about 6 feet of capillary tubing attached to the other end of the valve, as shown in the sketch. Open up the inverted drum and the shut-off valve until liquid starts to spray out of the capillary tube; then shut off the valve and then the drum.

Enough liquid is contained in the $\frac{1}{4}$ " tube to cool off the valve or control you're working on. You simply open the $\frac{1}{4}$ " valve and control the spray from the capillary on the bellows or bulb. It works beautifully and economically, and gets away from squirting refrigerant all over out of a cylinder.

R. J. Whiteside, Waterbury, Conn.

More on Transportation of Frozen Foodstuffs

Recently we had a brief review of the importance of refrigerated trucks in the growth of the frozen foods business—a business in which there are a number of profit opportunities for you.

Supplementing our previous observations, we thought you might like to know something about what some truck lines are doing to handle both frozen foods and regular freight in the same load.

One large concern already had met

Edited by
Warren W. Farr

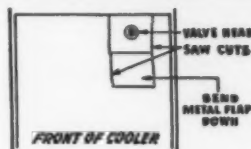
this problem by equipping its trucks with movable insulated partitions, which travel with the truck and can be used at any time to segregate the load. The partition can be anchored in any part of the body, and when properly installed makes the refrigerated compartment virtually airtight.

Another way in which the problem could be handled would be through use of individual built-in compartments, which could be separately loaded and unloaded at various points along the truck's route. Or, where frozen food is carried only occasionally, regular frozen food cabinets might be adapted for use on trucks. The cabinets could be loaded, wheeled on the truck, and be all set after connection to the power source.

WANT TO EARN \$5?



You don't have to be a writer or a literary genius! Just jot down some of the shortcuts you've developed in your maintenance or installation work and send them to **HERE'S HOW EDITOR, REFRIGERATION INDUSTRY**. Your \$5 will be paid promptly when your maintenance tip is published in the magazine. Let's hear from you!



ON some Sunroc and similar type water coolers, a service problem may have to do with the water regulating valve to the bubbler. Any trouble is made more difficult by the sheet metal through which the valve head protrudes, and by the valve being partially or wholly covered with hydrolene. When a defective valve needs service, I do it this way:

Make two hack saw cuts, one on each side of the valve, approximately 2" from valve center to a point about 1" below valve body. Bend this strip of metal down, leaving the whole valve head exposed. The head may then be unscrewed and diaphragm replaced or other repairs made. Of course the yoke cannot be replaced like this, but they never go bad, and this saves a great deal of messy digging into the hydrolene and unsweating of joints.

To finish the job, bend the metal strip up again and take your torch and re-melt the hydrolene to seal the insulation. The whole job can be done in about 25 minutes. I enclose sketch to show exactly how it is done.

—S. J. Putt, Fort Story, Va.

For Service Men Only

The pliers is a tool used nearly as often as the screwdriver. Here are some "do's" and "don'ts" to observe in its use to assure longer life of the tool:

DON'T

- use a pair of pliers as a hammer.
- hammer the handles or put them in a vise to cut heavy wire (use a heavier plier or a hacksaw).
- clip nails and bolts with wire

clippers.

—rock, saw, or pry when cutting with cutting pliers.

—use long-nosed pliers with thin blades to bend heavy wire.

—overload pliers in any way.

—use pliers to turn plated or soft-metal parts, unless burlap is used to protect from tooth-marks.

—use pliers to loosen tight nuts. A wrench is better.

—use pliers or a screwdriver to turn out a tight screw. A wrench is better.

—use pliers on any job where a wrench can be used instead.

—drop pliers on hard surfaces; they are easily cracked.

—hold metal, wire or similar material in a flame by means of pliers; the heat may be transmitted to the pliers and ruin them.

—try to remove a cotter pin with pliers until the spread ends have been cut off.

—hold the pliers in such a way that they may pinch your hand, if they slip off the work.

DO

—put a drop of oil on the joint of your pliers occasionally.

—rub pliers with an oily rag before putting them away.

—be sure there is no grease or oil on plier handles or inside of jaws when using them.

TO PREVENT breaking of lines to service gauges and at the same time to get enough stiffness to support the gauge, which cannot be done with a flexible rubber connection, here's how I do it:

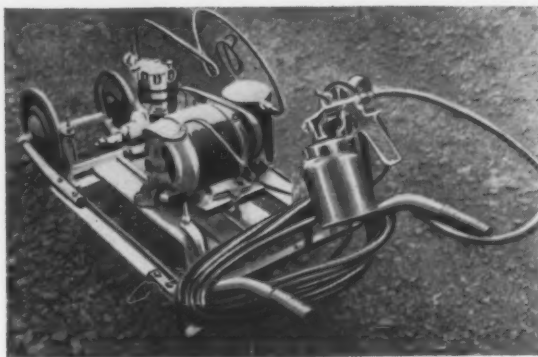
I use a 3-foot length of capillary tubing from an old expansion valve. For my flare connections I braze about a 4-inch length of $\frac{1}{4}$ " tubing on each end.

After slipping on the flare nuts and flaring the two ends, I have a very flexible gauge connection that can be stretched out quickly and coiled up quickly, without danger of kinking.

Claude A. Raab, Los Angeles

Editor's Note: This idea is a good one, and is used by a number of refrigeration men we know. However, if extremely small capillary tube is used, the gauge readings will not be accurate if they have been connected for a period of time, as the capillary tube will not pass a great volume of refrigerant vapor. Also, any oil in an assembly of this kind can make gauge readings incorrect.

A Handy Tool You Can Make Yourself!



Editor, Here's How:

I thought you might be interested in passing along to your readers the accompanying photograph and description of an air compressor outfit that I built from scrap refrigerator parts. This makes a very efficient paint spraying outfit, both for general use in the shop and around the home.

The parts that I used in constructing this outfit were:

A refrigerator assembly from a discarded refrigerator, and a Carrene tank;

Handles made from $\frac{1}{2}$ " pipe;

Wheel supports made from $\frac{1}{2}$ " pipe, bent and bolted to the frame.

This outfit is a great help in spray-

ing refrigerators in my shop. The best part of it is that it can be built, at very little cost, from scrap parts that can be found around almost any refrigerator repair shop.

John C. Goodman, S. Renovo, Pa.

* * *

Editor's Note: Mr. Goodman's contribution has given us an idea! Have any others of our readers constructed useful shop or servicing items from these or similar scrap materials? If so, write in and describe them for us, sending a photo or sketch wherever possible. There'll be a "reward" of \$5 for every one we accept and publish.

—use a cutting pliers in preference to a knife when skinning the insulation off wire.

—use pliers for removing cotter pins.

—use pliers for bending and looping wire.

Why Keep Records?

Some wag we know says that "business is what, when you haven't got any, you go out of."

One of the surest ways not to have a business is to neglect keeping necessary records about it. Your business records needn't be elaborate, but they ought to enable you to answer at least these simple questions:

How much cash business am I doing?

How much do my customers owe me? Can my business stand this much out in charge accounts?

How much cash do I have on hand or in the bank? Is the amount I have

on hand what it should be, or is there a cash shortage?

How much stock do I have on hand?

How much money do I owe?

How much are my operating expenses?

What was my gross margin during the period just past? That is, what was the difference between the amount of money I spent for all purposes and the amount I took in?

What net profit, if any, did I make after all expenses were paid, including taxes? Am I making a profit or losing money?

U. E. I. OFFICES MOVED

Offices of Utilities Engineering Institute have been moved into new quarters at 2525 N. Sheffield Ave., Chicago.

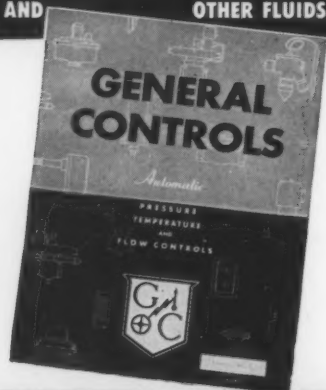
**BUY FROM YOUR
REFRIGERATION WHOLESALE**

THE REFRIGERATION INDUSTRY

Write Today

FOR CATALOG 52C-

PRESENTING A COMPLETE LINE OF
AUTOMATIC CONTROLS FOR GAS, OIL
WATER, AIR, STEAM, REFRIGERANT
AND OTHER FLUIDS.



GENERAL CONTROLS
801 ALLEN AVENUE • GLENDALE 1, CALIF.

Manufacturers of

Automatic, Pressure, Temperature & Flow Controls

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON

CHICAGO • DALLAS • KANSAS CITY • NEW YORK • DENVER

DETROIT • CLEVELAND • PITTSBURGH • HOUSTON • SEATTLE

SAN FRANCISCO • DISTRIBUTORS IN

PRINCIPAL CITIES

Time wasting searches for the right carbon brush are eliminated with Pure Carbon Kit No. 4—the Kit that contains 36 sets of popular brushes to fit 90% of all refrigerator motors. Each type of brush is packed in a separate, easily removable compartment for convenience in selection and keeping track of stock. The Kit itself is a heavy, metal-edged box which will stand plenty of wear and tear. For complete information, write today for catalog 42-B.

**The Brush You Need
is Right at Hand in**

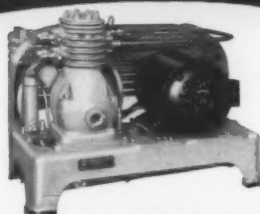
Pure Carbon
BRUSH KIT NO. 4



PURE CARBON COMPANY

449 HALL AVE. • ST. MARY'S, PA.

This Could Be
YOUR DOOR!



This is one of the types of equipment you could sell for us—1 HP air-cooled condensing unit—Methyl Chloride and Freon—12.



1 1/2 HP water-cooled condensing units. Methyl Chloride and Freon—12.



Here is a real profitable opportunity for you if we have no sales and service representative in your locality and if you are able to qualify.

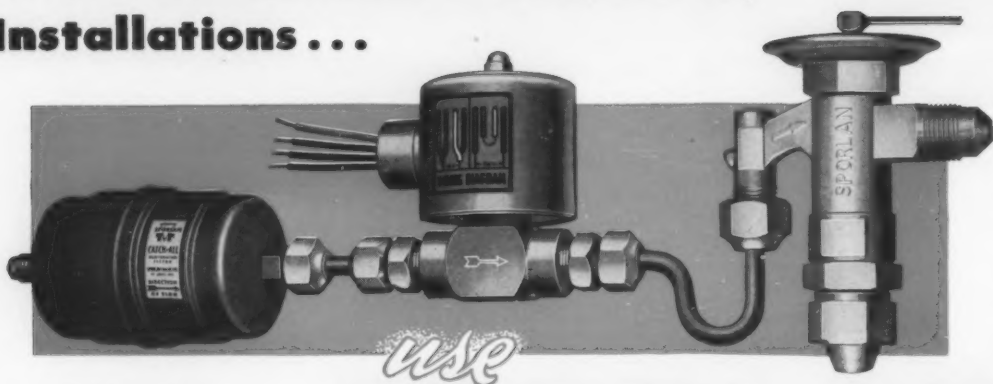
We are looking for adequately financed individuals or firms who have some experience in the air conditioning and commercial refrigeration fields. Personal integrity, enthusiasm, energy and a spirit of cooperative effort are factors that count heavily, as well as some knowledge of the market we would like to reach and the various applications to which our equipment can be put. We have the finest engineered line in the industry worthy of the finest type of representation. Lipman Machines are built in sizes ranging from 1/4 to 40 horsepower, making it possible to obtain machines that are suited for all requirements. Designed to use Ammonia, Methyl Chloride and Freon refrigerants.

GENERAL REFRIGERATION

DIVISION

YATES-AMERICAN MACHINE CO., Beloit, Wisconsin

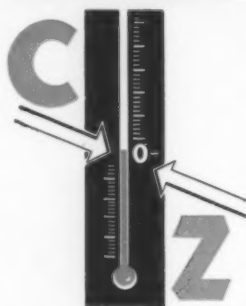
For Peak Performance
**on all Commercial Refrigeration
 Installations . . .**



use

SPORLAN
throughout!

**REMEMBER
 THESE SYMBOLS**



when ordering
**SPORLAN
 THERMOSTATIC EXPANSION
 VALVES**
 from your wholesaler.

SPORLAN "C" CHARGE
 for Suction Temperatures
ABOVE ZERO

SPORLAN "Z" CHARGE
 for Suction Temperatures
BELOW ZERO

Only Sporlan offers you
 Thermostatic Expansion
 Valves with Selective Charges!

SPORLAN Catch-Alls The most perfect Filter-Dehy-
 drator ever developed. It Cannot Powder! It Cannot Pack!

SPORLAN Solenoid Valves

SPORLAN Thermostatic Expansion Valves
 The only Thermostatic Expansion Valves with Selective Charges!

When you buy Sporlan Products you can be sure that
 they are designed and built to give the best performance
 characteristics under all operating conditions . . . so

Use Sporlan Throughout on your very next job and see
 for yourself what Peak Performance really means.

FOR ALL SIZES AND TYPES OF
 COMMERCIAL AND INDUSTRIAL REFRIGERATION APPLICATIONS

Sporlan Manufactures

SOLENOID VALVES • SOLENOID PILOT CONTROLS
 MODULATING PILOT CONTROLS • REFRIGERANT DISTRIBUTORS
 STRAINERS • CATCH-ALLS and the Only
 THERMOSTATIC EXPANSION VALVES
 with SELECTIVE CHARGES

You can install *Sporlan Products* with Confidence

SPORLAN VALVE COMPANY

3723 COMMONWEALTH AVE. • ST. LOUIS 17, MISSOURI

EQUIPMENT CAPACITY . . .

Continued from page 39

$$tr = \frac{92750}{20 \times 500} = 9.3 \text{ F}$$

(2) MEAN TEMPERATURE DIFFERENCE: We have noted above that the capacity of a water coil is directly proportional to the average temperature difference between the air passing over it and the water flowing through it. The term *mean effective temperature difference* (abbreviated *mtd* or *med*) is a logarithmic expression which most accurately expresses the average temperature difference existing between the air and the water. This value may readily be obtained from the tables or charts supplied by manufacturers of cooling coils. Such a chart is shown in Fig. 13. Before using this chart, it is necessary to determine temperature differences existing at both faces of the coil. The temperature difference at the air entering face represents the entering air dry-bulb temperature minus the temperature of the leaving water. This is known as the large temperature difference. The small temperature difference exists at the leaving air face, and is found by subtracting the temperature of the leaving water from the leaving air dry-bulb temperature.

Let us now determine the mean effective temperature difference which applies to the coil which will be used in our exemplary installation. The entering water temperature has been given as 55 F, and the temperature rise through the coil has been determined as 9.3 degrees, making a leaving water temperature of 64.3 F. The entering and leaving air dry-bulb temperatures were calculated in Article 7 to be 81.5 F and 62.5 F respectively. The large temperature difference is, therefore, $81.5 - 64.3 = 17.2$ degrees. Likewise, the small temperature difference is $62.5 - 55 = 7.5$ degrees.

Referring to Fig. 13, we locate the point of intersection between the horizontal line representing a large temperature difference of 17.2 degrees and the curve representing a small temperature difference of 7.5 degrees. The vertical line drawn through this point shows the mean effective temperature difference to be approximately 11.7 degrees.

WATER COIL CAPACITY: Depending upon the relationship between coil surface temperature and air dew-point temperature, cooling coils can operate in three conditions: (1) completely dry, (2) completely wet, and (3) partially dry and partially wet.

The heat absorbing capacity of a water coil when operating dry, i.e., when the water temperature at any point is above the dew-point temperature of the air at the same point, is given by the formula:

FORMULA 13

$Btu_s = fa \times mtd \times k \times r$ where,
Btu_s = sensible heat load, Btu per hour
fa = face area, square feet
mtd = mean effective temperature difference between air and water, degrees F
k = heat transfer coefficient, Btu per hour per row of coil per degree of mean temperature difference, per square foot of face area
r = number of rows in coil

When the temperature of the water leaving a coil is below the dew-point

Now ready for you. . . **FACTS ABOUT
 A NEW SILVER BRAZING ALLOY THAT
 STREAMLINES DESIGN, PRODUCTION, COSTS**



**WRITE FOR A COPY TODAY
 ...ASK FOR BULLETIN 15**

H ANDY & H ARMAN
 82 FULTON ST., NEW YORK 7, N. Y.
 Bridgeport, Conn. • Chicago, Ill. • Los Angeles, Cal. • Providence, R. I. • Toronto, Canada
 Authorized by the Federal Bureau of Investigation

SEP-RETURN

*Trade Mark Reg.



AUTOMATICALLY . . .

Separates oil from refrigerant
Returns oil to compressor

- Simple to install
- Filter-separator, easy to clean—
Easily replaced
- Vast improvement in operating
efficiency
- Outstandingly low priced . . .
List price \$8.00
IMMEDIATE DELIVERY

ORDER FROM YOUR LOCAL JOBBER

WABASH

MANUFACTURING CO.

2642 S. Michigan Ave. Chicago 16, Ill.

temperature of the entering air, the coil will operate completely wet. In this condition, the overall heat transfer coefficient of the coil is increased, for in addition to the normal amount of sensible heat removal, the coil can also absorb an additional amount of

WHO says persistence doesn't pay? Mayor George Patterson of St. Petersburg, Fla., long one of the moving spirits in a seemingly futile struggle to bring about completion of the air conditioning in the town's city hall, finally won the battle.

After some eight years filled more with words and red tape than with action the system finally was placed in operation—just in time for the good mayor to enjoy just one month of air-cooled comfort before retiring from office! Despite the added attraction of air conditioning, Mayor Patterson announced that he would not run for re-election.

latent heat. This increase in heat transfer capacity for any specific set of conditions may be found in manufacturers' tables or charts. Fig. 14 shows The Trane Co.'s copyrighted chart giving wetted fin surface. This

factor when multiplied by the heat transfer coefficient of the coil when operating dry (see Fig. 9) gives the revised heat transfer coefficient for the wet coil.

By way of illustration, let us determine the heat transfer increase factor for the coil which will be required in the installation which we are now considering. In order to use the chart of Fig. 14, it is necessary to know (1) the difference between the entering air dry-bulb temperature and the entering water temperature and (2) the difference between the dew-point of the entering air and the entering water temperature. The entering water temperature has been given as 55 F, and the entering air temperatures were determined in Article 7 to be 81.5 F DB and 67.8 F WB, resulting in a dew-point temperature of 60.8 F. Item (1) above is, therefore, 81.5—55=26.5 degrees; and item (2) above becomes 67.8—55=12.8 degrees. In Figure 14, the point of intersection of the 26.5 curve representing item (1) and the 12.8 vertical line representing item (2) lies on the horizontal line with the coordinate 1.22. The heat transfer increase factor for this particular coil, therefore, is 1.22.

The total heat absorbing capacity of a coil operating wet may be found by use of the following formula:

FORMULA 14

$Btu. = fa \times mtd \times k \times f \times r$ where,

$Btu. =$ total heat load (sensible and latent), Btu per hour

$f =$ factor for increase in heat transfer capacity due to wetted surface

The total capacity of a coil operating partially wet and partially dry is the sum of the capacities of each portion of the coil.

1,500 TONS OF COOLING IN NEW OHIO HOTEL

Three Carrier centrifugal refrigerating machines of 250, 600, and 700-ton capacity respectively have been installed in the new Terrace Plaza Hotel building in Cincinnati. Together they will cool 2400 gallons of water per minute from 57 to 42 F for the cooling system in this \$12,000,000 hotel-store combination which is expected to be in operation sometime early next winter.



TEMPERATURE RECORDER

Standard Ranges
24 Hour Chart Rotation
—20° to +40°F.
—10° to +50°F.
30° to 60°F.
40° to 100°F.
70° to 130°F.

Convertible to Motor Operation Recorder, or Different Temperature Range, Simply by Changing Door

Any TEMPSCRIBE can be quickly converted to a different temperature range, or to a time-operation recorder, by replacement of the door that forms the front of the recorder. Door removal simply requires lifting out the hinge pin.

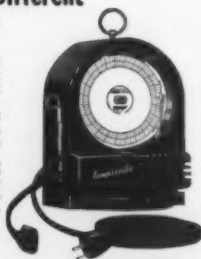
The pen of the Operation Recorder is actuated by an electro-magnetic armature, made for either series connection (plug-in connections shown at right) or for parallel connection. Either type has voltage range up to 250 volts, amperage range up to 20 amperes.

For refrigeration shop and service work a widely used TEMPSCRIBE combination comprises one clock case with spring-wound clock for 24-hour chart rotation and two doors (one with —20° to +40°F. temperature element, and one with mechanism for recording motor on-and-off time).

Ask your jobber about TEMPSCRIBE or write for Bulletin 731

BACHARACH INDUSTRIAL INSTRUMENT CO.

7000 Bennett Street - Pittsburgh 8, Pa.



RECORDER for
MOTOR OPERATION

Basic... IN LOCKER PLANT PLANNING!

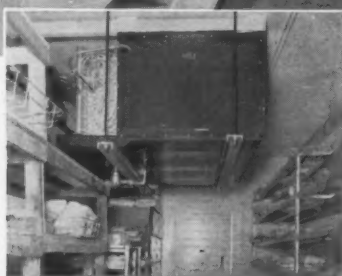
ZER O PAK

High humidity locker cooling

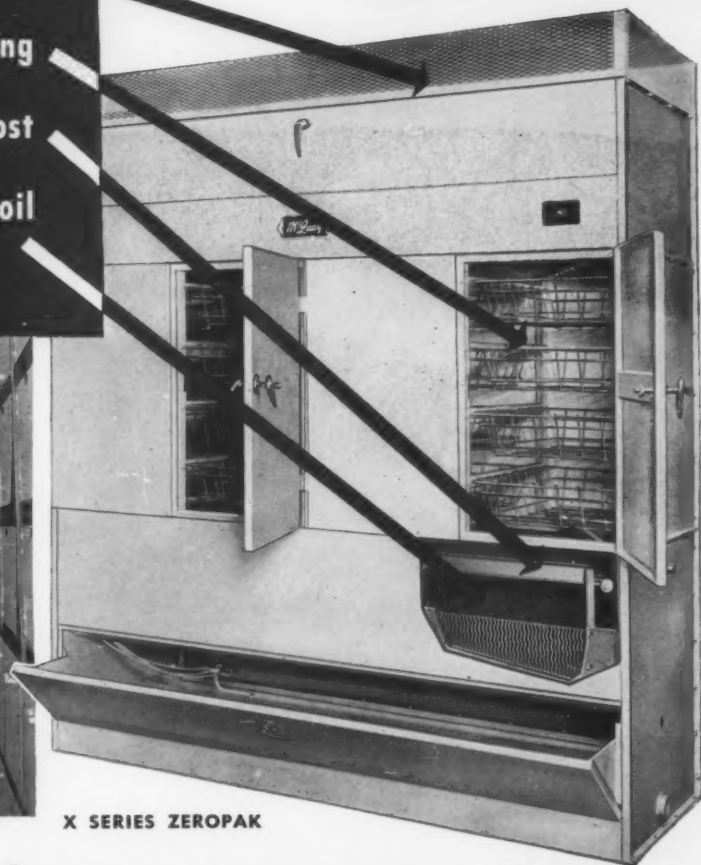
High velocity tunnel freezing

High economy water defrost

High efficiency McQuay coil construction



L SERIES ZEROPAK is designed for plant requirements up to 1500 lockers. In installations such as pictured above the L series ZEROPAK maintains proper temperatures in both the sharp freeze room and the locker room.



X SERIES ZEROPAK

Combining high-velocity sharp freezing with high humidity locker cooling, McQuay low-temp ZEROPAK units play a dual role in locker plant operation. Big, economical McQuay coils provide cold air for fast, uniform freezing and moist air storage for keeping natural food flavors sealed in.

Tunnel freezing eliminates "freezer burn" because heat is uniformly removed from the entire surface of the product. Dehydration during storage is prevented by the high moisture content of the cooling air.

X SERIES ZEROPAK units incorporate exclusive hydraulically expanded McQuay coils, water defrosting, tinned wire baskets and many other features. See your refrigeration wholesaler today. McQuay, Inc., 1643 Broadway St. N. E., Minneapolis 13, Minn.

McQuay



EVERY PHASE OF REFRIGERATION AND AIR CONDITIONING



**Dry
Beverage
COOLER**

Beautiful stainless steel and polished aluminum outside with polished aluminum interior. Heavy duty fin-type coils give fast cooling and less frosting. Rugged construction, first quality materials. Stainless steel lids slide away or lift out. 8-inch utility shelf. Removable dividers inside. Toe space under edges.

**Complete Line of
Refrigeration**

**Immediate
Delivery**

**Dealers
Wanted**

WALLEN

ROGERS

Industries

Box 272-RI

Demopolis, Ala.

Rebuilding the Coldspot Unit

By A. G. Bate

4. STARTING AFTER ASSEMBLING

THE expansion valve should be closed (screwed out) and the purge valve in the receiving tank turned open, then the motor turned on. A gauge installed on the low side should show approximately 28 inches of vacuum if the pump is efficient. A pull-down pump, capable of pulling 28 inches of vacuum, should be connected to the receiving tank and used as a back-up pump. The evaporator, condenser, receiving tank etc., should be heated thoroughly with a torch, if no oven is available to dehydrate the unit. The internal parts of the pump should be dehydrated just before assembly of the pump.

After this dehydrating process is complete, the valve on the receiving tank should be closed. The gas is now ready to be added (2 lbs. SO₂) in vapor form. See that the expansion valve is closed, and a deep vacuum is obtained. Let the pump pull in at least one pound of gas, then shut the valve on the cylinder and observe the amount of the vacuum. This reading now should be at least 25 inches of vacuum, if the valve blades have been broken in by this time. After installing the balance of gas, let the pump pull a deep vacuum again after the cylinder is turned off, then set the expansion valve to read between 5" and 6" of vacuum. The unit should eventually cycle off when a temperature of 15 to 18 F is obtained in the evaporator, with the thermostat between 4 and 5 position.

If frost finally appears above the base, on the suction line, the expansion valve should be closed about one-half turn, and watched before being turned again in order to see if defrosting occurs.

NOW!

**FORGED FLARE NUTS
AND FITTINGS**

**Prompt Shipment
on Most Items**

Electrimatic

2100 INDIANA AVE
CHICAGO 16 ILLINOIS

MARTIN CO. TO HANDLE CARRIER UNITS IN GA.

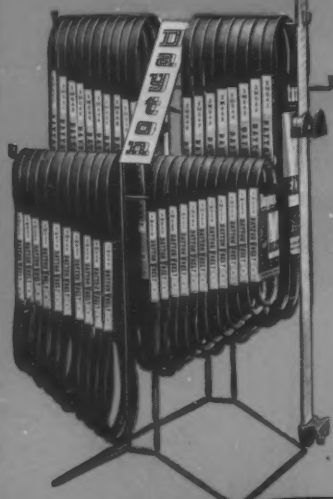
Charles S. Martin Distributing Co., 250-256 Peachtree Street, Atlanta, has been appointed Georgia distributor for Carrier room and office air conditioning units and Carrier food freezers. Charles S. Martin, president of the company, held a meeting of dealers from all parts of Georgia to show them new models of Carrier equipment.

RESUMES ENGINEERING POST AT BRUNSWICK

Wynn G. Winkler has returned to Brunswick-Balke-Collender Co., Muskegon, Mich. plant as chief engineer, a post he held before going with Reynolds Metals Corp. in April, 1946. He has been in the refrigeration field for more than 20 years, starting with Frigidaire in 1927 and later being associated with Crosley, Kold-Hold and Brunswick. Frank Walsworth, who has been handling Brunswick's engineering during Mr. Winkler's service with Reynolds, will continue as assistant refrigeration engineer.

Increase V-Belt Sales- make 40% profit

With Dayton Fractional Horsepower Salesmaker Assortments



SENIOR SALESMAKER

WITH 39 FASTEST SELLING DAYTON FHP BELTS

Brings a 40% Dealer Profit Margin

Consumer Net.....\$50.63

Dealer Net.....30.36

Dealer Profit.....\$20.27

Everything you need to cash in on this tremendous market... everything you need to make you Fractional Horsepower V-Belt Replacement Headquarters is included in either the Junior or Senior Salesmaker. Remember, the Dayton line is the profit line. Tie in with one of our Salesmakers and let it go to work for you. Write today: DAYTON RUBBER • DAYTON, OHIO

BOTH ASSORTMENTS INCLUDE

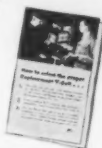


THE NEW DAYTON V-BELT MATCHOMETER

For speed and simplicity in finding the correct V-Belt replacement—it has no equal.

INSTRUCTION FOLDER with HELPFUL DISPLAY HINTS

How to select the correct Dayton V-Belt replacement, how to use the Matchometer and hints for utilizing merchandising aids.



WALL and WINDOW STREAMERS



Colorful streamers for walls and windows are packed with each assortment. Decals, counter cards, banners and other point-of-sale helps are available.

HANDY FHP CATALOG #44

Contains complete list of all types of small machinery, with the correct Dayton V-Belt replacement to use, as well as additional pertinent information.



Quick Reference PRICE CARD

Belt numbers, size and suggested resale price are included on each card for ready and quick reference.



JUNIOR SALESMAKER

WITH 25 FASTEST SELLING DAYTON FHP BELTS

40% Profit on a Minimum Investment!

Consumer Net.....\$30.24

Dealer Net.....18.14

Dealer Profit.....\$12.10



In Dayton V-Belts give you an additional selling feature

UNSURPASSED BELT QUALITY

Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER



FRANK: You know, Jim, I had one of our customers ask me some questions today that set me to thinking and did me a lot of good. Funny how you develop a complete picture of the value of things when you begin thinking and analyzing the reasons for established conditions and practices.

JIM: What was this all about?

FRANK: Bill Smith, general manager of the City Refrigeration Co.—you know the company. They started here last year and are doing a lot of contracting business putting in new installations, also servicing old equipment. Bill asked me today why he should buy his refrigeration parts and supplies from us wholesalers, instead of from the manufacturer. He has been noticing that many of the manufacturers say in their advertising, "Buy From Your Wholesaler."

JIM: That question was right from the shoulder and gave you some-

thing to talk about. What did you tell him?

FRANK: I really tried to give him the best and most logical reasons why it was to his advantage as a contractor to buy from a refrigeration equipment wholesaler rather than from all the different manufacturers direct.

JIM: Go on, Frank; I'd like to hear what you told him.

FRANK: First, I explained to him that a number of years ago, before refrigeration wholesalers were doing business, refrigeration contractors and mechanics all bought direct from the manufacturers; they had no other source of supply. This condition wasn't good for the manufacturer, the contractor or the consumer.

The manufacturer was called upon to handle hundreds of small miscellaneous orders for out-of-town shipments each day. Many orders failed to give complete information, necessitating writing a letter for more details, thus holding up shipment while information on one or two items was straightened out. Other orders were held up because the check covering payment was for a wrong amount.

Sometimes orders were delayed while waiting for a few items not in stock, to eliminate making several shipments. All such things,

along with many other conditions, made the handling of hundreds of individual orders very expensive.

Manufacturers had more trouble with their production schedules, since they had little advance notice of the items the trade were needing, day to day, or month to month. Setting up credit arrangements with customers was difficult, and often collections were expensive and troublesome.

Misunderstandings frequently developed, the trade often needed information about products or wanted to see the product before they bought, which was also another difficult and expensive prob-



lem. Delays were often the result, and the contractor's customers had to wait long periods before getting new equipment installed; also repairs on breakdowns were often troublesome because of delays caused by one thing or another.

Gradually the manufacturers realized it was an expensive problem trying to handle individual orders direct with the trade. Some manufacturers thought setting up their own warehouses in large distribution centers might be the solution to this problem.

Manufacturers found, however, that the cost of operating warehouses was excessive; the volume of business often was inadequate to carry the cost of operating them. Only four or five of the large distributing centers throughout the country could offer enough volume to make such warehouses pay their own way.

MAGIC IN A SMALL BOTTLE

FREEZE-UPS ELIMINATED RIGHT AWAY!




ICE-X quickly cures emergency freeze ups when ice forms at the expansion valve or capillary tube. Harmless to use. Great for Freon, Carrene, or Methyl Chloride systems . . . The dependable liquid anti-freeze.

"ONE SERVICE MAN TELLS ANOTHER - IT'S GREAT"

ORDER FROM YOUR JOBBER OR—

EXCLUSIVE NATIONAL DISTRIBUTOR

THE HARRY ALTER CO. 1728 S. MICHIGAN AVE. CHICAGO 16, ILLINOIS

JOBBER: WRITE FOR SPECIAL PROPOSITION!

JIM: That painted a good picture of the problem the manufacturers had in attempting to sell direct to the trade.

FRANK: Bill was following my story and could see the problem as I explained it to him. I then explained that refrigeration wholesalers started up in business, here and there, throughout the country.

At first there were only a handful of them, but they quickly proved their value in the merchandising distribution plan and the movement continued to grow rapidly as both manufacturers and the trade found the wholesaler a solution to many of their problems.

The wholesaler set up warehouse stocks, comprising many items from many manufacturers. No one line of merchandise had to carry the overhead as this expense was distributed over all the lines handled by the wholesaler.

As the wholesaler purchased warehouse stock in reasonably large quantities from many manufacturers, he was able to handle the merchandise on a reasonable percentage of profit, well in line with the investment he had tied up in the business. Many of the problems that developed from handling orders through the mail were eliminated and the merchandise was placed more promptly in the hands of the contractor, without any increase in cost to him.

Many mistakes in ordering could be quickly corrected. The problem of repair and replacement of merchandise, under the manufacturer's warranty, was conveniently handled to the benefit of all concerned.

JIM: Did you also point out that the wholesaler, being on the scene, could arrange for extension of credit and by fast delivery enable the contractor to do business with considerably less capital in the business, since it was no longer necessary for them to stock up on material in advance or in anticipation of future requirements, as the wholesaler took over that function?

FRANK: You bet I did. Bill Smith listened to everything I had to tell him, and when I had finished he readily agreed that the wholesaler was a big factor in the supply picture.

**BUY FROM YOUR
REFRIGERATION WHOLESALER**



**"Capacity
is a serious subject"**
says The Lehigh Team

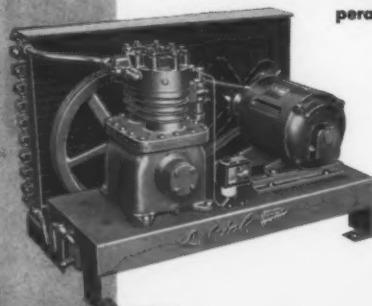
BTU RATINGS are the "facts of life" that have to be faced eventually.

That is why Lehigh continues to dwell on the subject. Lehigh hopes to save you from learning these facts the costly way.

Refrigeration engineers will tell you that there are many "trick" ways to obtain "capacity" ratings. You can, for instance, put a cake of ice on the cylinder head, direct a diffuser at the unit, put a heat exchanger on it, or pack it in dry ice. But who's fooling whom? Just pity the poor devil who tries to duplicate the "rating" on a job!

There is only one right way to make a test according to the ASRE Code, and that is by test conditions of controlled room temperature of 90° with suction gas entering the compressor at 80° through the full range of evaporating temperatures from minus 25° to plus 45°.

That is the way Lehigh BLU-COLD BTU Ratings are established—and that is why BLU-COLD Ratings can be duplicated in the field.



**Lehigh BLU-COLD
HEAVY-DUTY
CONDENSING UNITS**

1/3 to 2 H.P. ★ Complete Line To Include Up to 5 H.P.

Lehigh Mfg. Co.

PLANT: LANCASTER, PA.

**THESE OILS
BUILD BUSINESS
FOR YOU**



**ONLY CAPELLA OILS OFFER
ALL THESE FEATURES**

- ★ High stability
- ★ Freedom from moisture
- ★ Non-reaction with refrigerants
- ★ Resistance to gumming and sludging
- ★ Very low pour tests
- ★ Complete viscosity range
- ★ Re-sealable 1-qt., 1-gal. and 5-gal. containers
- ★ Approved by leading manufacturers of refrigerating compressors and air conditioning equipment

If you're a Service Engineer . . .

The proved ability of *Texaco Capella Oils* to assure dependable, trouble-free compressor operation is *your* assurance of complete customer satisfaction. Thus, you establish a reputation for reliability that holds *old* customers . . . brings *new* ones in increasing numbers.

If you're a Distributor or Dealer . . .

The same outstanding qualities which make

Texaco Capella Oils such effective business builders for the service trade, will build business for *you*—through repeat orders, and through new business which comes from recommendations of satisfied service engineers.

Texaco Capella Oils are always available for prompt delivery.

The Texas Company, 135 East 42nd Street,
New York 17, New York.



TEXACO Capella Oils
FOR ALL AIR CONDITIONING AND REFRIGERATING EQUIPMENT



Tune in . . . TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Sunday night. See newspaper for time and station.



Manufacturers of

ICE CREAM CABINETS

FARM and HOME
FREEZERS

FROZEN FOOD DISPLAY
CABINETS

SODA FOUNTAINS
and
BOB TAILS

PLAYSAFE
USE
CHICAGO SEALS
and
VALVE PLATES



SEPTEMBER, 1947

THE PRACTICAL Refrigeration Engineering MANUAL

... by Harold Smith

XIX. Hotels and Restaurants

HOTELS require refrigeration for many uses, including air conditioning of dining rooms, bars, meeting rooms and sleeping rooms.

Refrigeration for foods and beverages covers a wide range of usage in storage and service coolers, short order boxes, beverage coolers, drinking water coolers. Additional box or cooler equipment is provided for salads, pastries, ice cubes and frozen foods.

The equipment found in most of the large and better class hotels is quite large as the requirements are usually great. Many of the largest hotels use ammonia plants with facilities for manufacturing ice while taking care of all other refrigeration requirements. Regardless of whether the refrigerant used is ammonia or one of the low pressure refrigerants there are many opportunities for the refrigeration man in this field.

SMALL UNITS FAVORED

Over a period of years many hotels have eliminated large central ammonia systems for individually operated units using Freon or Methyl Chloride refrigerants. Such a change-over frequently results in lower operating cost and less maintenance and supervision.

Hotels often are faced with widely fluctuating demands for foods and beverages necessitating purchases of these items in large quantities far in advance of its consumption. Ample refrigeration must be available not only to take care of food products on hand, but constantly arriving supplies for future use.

Large basement storage coolers usually carry the major part of the foods received. Foods are

distributed from these large storage coolers to the smaller service coolers located throughout the hotels, convenient to the hotel kitchens and dining room. With coolers holding different kinds of foods, the waiters can quickly secure the items requested and place them before the guests in prime condition at desired temperatures.

TYPICAL HOTEL NEEDS

As even the smaller hotels usually have a coffee shop, dining room, and bar where food is served, the need for service coolers, well distributed, is very essential. The hotel bars use refrigeration for beverage coolers, beer cooling, and liquor cooling in addition to the food service coolers.

An experienced refrigeration engineer can find many opportunities for new uses of refrigeration in hotels. Frequently a careful analysis of the existing equipment offers a refrigeration engineer an opportunity to suggest or recommend worthwhile changes in the layout of equipment as a means of reducing labor in handling foods, or economy in general operating costs.

STORAGE COOLERS

The average size hotel usually has most of the following equipment: a large storage cooler where products are received and stored in bulk for future use. Food is removed as needed from this storage cooler to service coolers adjacent to the kitchens. Before the food is placed in the service coolers it is processed and put up into individual servings. The meat is cut into steaks, chops, roasts. Vegetables are prepared and cooked; salads and pastries are made up. Butter

1946 COOLING SALES SET CHICAGO RECORD

A total of 517 installations of air conditioning equipment, exclusive of plug-in type room coolers, was registered in Chicago in 1946, figures announced recently by Gerald Gearon, deputy chief of the city's Boiler and Refrigeration Inspection Departments. This was the highest number of installations ever made in Chicago in a single year; the previous high was 445 installations in 1941.

Total tonnage of 1946 installations was 8,487, with an estimated 9,335 total connected horsepower load. More than 65% of the installations were of 7½ hp size or under with the 5 hp classification the most numerous.

Room cooler sales, on which no official count was made, were estimated at about 550 units for the year.

Stores, with 128 installations in all type establishments, led the users last year. Restaurants accounted for 98 installations, offices for 137.

and cheese are cut into proper size squares. Every item is ready for individual service.

The service coolers frequently are large reach-in type coolers usually using glass doors so items are quickly located from the outside. Several coolers are often used as in this way different types of food can be segregated and quickly located.

Cool drinking water is a very essential item and a water cooler with storage facilities for glasses must be conveniently placed for frequent usage.

FOR FROZEN FOODS

Frozen food coolers located conveniently to the kitchens hold sea food and frozen meats and vegetables for fast handling of these products in the kitchens as ordered by the guests.

Hotels usually have quantities of foods left over from each meal period which are refrigerated until ready for use at the next meal. This food is usually placed in the service coolers for convenient handling.

Supplying ice in drinking water and with setups for room service is another item of considerable importance in hotel service. Frequently large coolers, held at temperatures close to zero F, are filled with cracked ice or cubes and used to serve this need. By keeping this ice in low temperature coolers little or no shrinkage occurs, and as ice is used in large quantities this represents a big item in hotel operations and reduces the cost for this service to a minimum.

AIR CONDITIONING

The use of air conditioning in hotels varies greatly. Large hotels located in hot, humid climates frequently are completely air conditioned. Other hotels confine air conditioning to meeting rooms and restaurants, with facilities for air conditioning

some of the sleeping rooms. If the air conditioning facilities are not available for all sleeping rooms, self-contained individual units are usually used in the rooms offering this convenience.

LOAD DATA NORMAL

Most hotels located in hot climates find air conditioning a good investment resulting in increased volume of business, as guests will usually remain for longer periods in comfortable room conditions and purchase more food or drinks as a result.

No attempt to make a detailed layout of hotel equipment will be made. Most refrigeration equipment used in hotels is built along conventional lines but frequently is larger in size than the equipment used in stores.

The same methods are used to determine the refrigeration load requirements as would be employed for similar applications. It is very important, however, to secure complete information on the quantities of food passing in and out of the fixtures, the extent of service, and the temperature in the fixtures together with the outside surrounding room temperatures. If care is used to secure complete information no unusual problems should be encountered in estimating the load requirements.

LOCATION OF UNITS

The location of condensing units in relation to fixture locations may present some problems in working out the installation. There may be some study required to determine whether each fixture should be operated as a single unit or as a part of a multiple installation. These conditions will vary in each different hotel layout and must be studied and finally set up according to the most workable arrangement best suited for the individual installation.

SHANK VALVES

The Finest SHANK SEMI-STEEL SHUT-OFF VALVES

Made of highest grade non-porous metal—full size ports insure maximum flow. Clean cut threads. Double seated stem of rust proofed carbon steel. Special design base with swivel seat for perfect alignment. Long life packing ring.



When you use Shank Refrigeration products you use the finest

ALL-STEEL LINE VALVES
ALL-STEEL GAUGE SETS
WATER REGULATORS
STRAINERS—DRIERS

Write for bulletin and prices

CYRUS SHANK COMPANY
631 W. Jackson Blvd., Chicago 6, Ill.

recommended
for
painted or
enameled
surfaces...

Jarrow...
Refrigerator Door Gaskets Are Again
Made From Crude Rubber

Always Demand These
Quality Gaskets

JARROW PRODUCTS
420 N. LA SALLE ST., CHICAGO 10, ILLINOIS

THE REFRIGERATION INDUSTRY

OPPORTUNITIES

Classified Advertising Section

Rates: for "Positions Wanted" \$3.50 minimum, limit 25 words. For all other classifications, \$3.50 minimum for 25 words, each additional word 10c; bold-

face type or all capitals, \$6.00 minimum for 25 words, each additional word 15c; limit 50 words. Box addresses count as five words.

POSITIONS AVAILABLE

Carrier Distributor requires the services of a Refrigeration Sales Engineer, capable of handling commercial and industrial refrigeration, air conditioning and low temperature applications. Not essential, but would prefer a man experienced with Carrier Equipment. Allied Refrigeration Sales Corp., 2540 Prospect Ave., Cleveland, Ohio.

Master mechanic with operating engineer's license wanted for food plant located in New Jersey. Man with food factory experience preferred. Give complete details of experience and qualifications in your application, salary expected and when available. Box 9247, Refrigeration Industry.

SALES MANAGER wanted by wholesaler located in Midwest. Salary \$4,000-\$5,000 per year. Must be thoroughly familiar with commercial refrigeration equipment and parts and air conditioning equipment. Write full details on education and experience, enclosing photo and giving references and name of present employer. Box 9147, Refrigeration Industry.

BUSINESS WANTED

Pay cash for commercial refrigeration or air conditioning sales or service business in New York Metropolitan area. Full details in first letter. Box RI 1247, 113 W 42nd St., New York 18.

REPAIR SERVICE

Refrigeration Controls and Valves Repaired. Complete service for all makes and types. Also Stoker and Oil-Burner controls repaired. All work guaranteed. Write for prices or just mail in controls. Acme Control Service, 5521 Lawrence Ave., Chicago 30, Ill.

EQUIPMENT FOR SALE

Quality bobtail fountains; reach-ins, walk-in boxes—wood, metal; dough retarders; double duty cases—stainless steel, porcelain; dairy, florist, bakery cases; ice cream hardening cabinets; thermopane frozen food cases; milk, sandwich coolers; stainless steel back bars; with machines. Equipment made to special order. Frigitemp Corp., 931 Bergen St., Brooklyn 16, N. Y. MA 2-9093.

FOR SALE: 12 - 16 - 19 - 22 and 26 cubic foot freezer cabinet. Write for list and prices. Rathbun Refrigeration Company, 325 Scribner Ave., N. W., Grand Rapids, Michigan.

SEALED CROSLLEY TERMINALS. Installed from the outside in a few minutes without opening the compressor. Corrects leaky terminals on all Crosley "F-12" units. Set of three \$5.25 (Part No. 1020). Installation tool \$.20. Immediate delivery. Money-back guarantee. SEALED UNIT PARTS CO., 3097 Third Ave., New York 56, N. Y.

EQUIPMENT FOR SALE

Compressors and condensing units for commercial and domestic refrigeration, air-conditioning and reverse cycle heating. Modern, two-stage, single piston, reduced size and weight—reduced power requirements—reduced cost and greater margin—greater volumetric capacity—greater efficiency.

Real opportunity for quality merchandisers. Manco Corporation
39 South LaSalle Street, Chicago 3, Illinois

FOR SALE—Air-cooled and Water-cooled, remanufactured condensing units, 1/4 up to 2 H.P. Write for particulars, Edison Cooling Corp., 310 East 149 St., Bronx 51, N. Y.

BUSINESS FOR SALE

For Sale, Near Oakland

Commercial Refrigeration and exclusive major appliance and electrical contracting business. Two stores established twenty years, average net profit per month, two thousand dollars.

Reason for sale—owner has other interests. Write or contact Ralph Bent—Elks Club No. 3, 456 Post St., San Francisco, Calif.

For Practical Installation and Maintenance... choose MASTIC FLOORING



- Equally adaptable for new construction or resurfacing old floors.
- Easily laid over concrete, wood, steel or other firm base.
- Withstands heaviest industrial traffic. And, ideal as a resilient underlayment for decorative flooring.
- Dustless, shock-absorbing and sound-deadening. Provides clean, comfortable working conditions.
- Modern asphalt Mastic, made with Flintkote Flooring Emulsions, is laid cold... hand finished or power floated.

Learn how this modern all-purpose flooring meets *your* needs. Write today to: THE FLINTKOTE COMPANY, 30 Rockefeller Plaza, New York 20, N. Y. • Atlanta, Boston, Chicago Heights, Detroit, Los Angeles, New Orleans, Washington, Toronto, Montreal.

FLINTKOTE
Products for Industry



★ Federal ADD-A-PANEL All Steel Clad



6'8" or 8'6" high

WALK-IN REFRIGERATOR

Sections pre-fitted.
Simple to assemble,
move or enlarge

Standard door panel
may be placed any-
where around the box

**Designed to meet today's
Food Storage Demands...**

Only Federal Offers These "Peak of Protection" Features:

- Insulated panels can be furnished to add service or sliding doors for display service unit • Porcelain trim can be added for sparkling beauty for your shop
- Front panel can be furnished with four or eight sliding doors for self service
- A 33 cu. ft. quick freeze cabinet can be installed in any Federal walk-in.

Write for literature and dealer prices

Federal REFRIGERATOR MFG. CO.
COMMERCIAL REFRIGERATORS ★ WAUKESHA, WIS.

MARTIN GRASSO DIES; WITH WILLIAMS & CO.

Martin (Marty) Grasso, desk salesman for the refrigeration supplies division of Williams & Co., Cleveland, died suddenly Aug. 1. He had a wide acquaintance among refrigeration men in the Cleveland and northern Ohio territory. He is survived by his mother, Mrs. Kate Grasso, and two brothers, Anton and George.

**BUY FROM YOUR
REFRIGERATION WHOLESALE**

COAST DISTRIBUTOR GETS 4 FRANCHISES

Appointment of California Refrigeration Supply Co., Sacramento, as west coast distributor for Fogel Refrigerator Co., Philadelphia, Phillips Mfg. Co., Los Angeles, the NAT Corp., Kansas City, and Federal Store Equipment Co., Waukesha, Wis., has been announced by T. E. Tyler, sales manager of the distributorship. The company operates through California north of Bakersfield, Oregon, Washington, Idaho and northern Nevada.

INDEX TO ADVERTISERS

THE REFRIGERATION INDUSTRY
SEPTEMBER, 1947

Ace Ice Cream Cabinet Co.....	85
Alco Valve Co.....	6
Allen-Bradley Co.....	22
Harry Alter Co.....	82
American Bitumuls Co.....	66
American Brass Co.....	10
Ansul Chemical Co.....	8
Arcade Mfg. Division.....	27
Artkraft Mfg. Corp.....	5
Automatic Products Co.....	Cover 3
Bacharach Industrial Instrument Co.....	78
Ben-Hur Mfg. Co.....	70
Black, Sivalis & Bryson.....	64
Bonney Forge & Tool Works.....	16
Brunner Mfg. Co.....	7
Century Electric Co.....	9
Chase Brass & Copper Co.....	25
Chicago Seal Co.....	85
Commercial Credit Corp.....	51
Davison Chemical Corp.....	62
Dayton Rubber Mfg. Co.....	81
Detroit Lubricator Co.....	4
Electrimatic Division.....	80
Eston Chemicals, Inc.....	61
Federal Refrigerator Mfg. Co.....	87
Flintkote Co.....	87
General Controls Co.....	75
Grand Rapids Brass Co.....	57
Greater New Orleans, Inc.....	24
Grunow Authorized Service, Inc.....	68
Handy & Harman.....	77
Henry Valve Co.....	17
Highside Chemicals Co.....	56
International Nickel Co.....	14
Jack & Heintz Precision Industries, Inc.....	2
Jamison Cold Storage Door Co.....	11
Jarrow Products.....	86
Kerotest Mfg. Co.....	46
Kramer Trenton Co.....	20
Larkin Coils, Inc.....	70
Lehigh Mfg. Co.....	83
Linde Air Products Co.....	19
Lynch Mfg. Corp.....	1
McIntire Connector Co.....	55
McQuay, Inc.....	79
Mills Industries, Inc.....	32
Mueller Brass Co.....	12
Nash-Kelvinator Corp.....	59
National Gypsum Co.....	53
Northern Indiana Brass Co.....	21
Peerless of America, Inc.....	41
Penn Brass & Copper Co., Inc.....	60
Penn Electric Switch Co.....	28
Premier Co.....	58
Pure Carbon Co.....	75
Ranco, Inc.....	72
Redmond Co., Inc.....	13
Refrigeration Engineering, Inc.....	69
Revere Copper & Brass, Inc.....	18
W. Allen Rogers Industries.....	80
Rotary Seal Co.....	54
Sanitary Refrigerator Co.....	66
Servel, Inc.....	23
Cyrus Shank Co.....	86
Simpson Electric Co.....	71
Sporlan Valve Co.....	76
Superior Valve & Fittings Co.....	65
Temprite Products Corp.....	63
Texas Co.....	84
Tudor Chemical Specialties, Inc.....	68
Virginia Smelting Co.....	88
Wabash Mfg. Co.....	67, 78
Wagner Electric Corp.....	26
Weatherhead Co.....	15
Weber Showcase & Fixture Co., Inc.....	Cover 2
Witte Engine Works.....	68
Yates-American Machine Co.....	75

Need Gas?
"FILL IT AND FORGET IT"



With

VIRGINIA METHYL CHLORIDE

You can forget all about that refrigeration unit when you recharge with Virginia Methyl Chloride. You can bank on that. Why? Because "V-Meth-L" is made specifically for refrigeration uses. Each container is tested and re-tested to eliminate the possibility that any dirty, oily or wet product will be shipped. Good reasons why "V-Meth-L" has an international reputation for high quality. VIRGINIA SMELTING COMPANY, West Norfolk, Va. *Established 1898.*

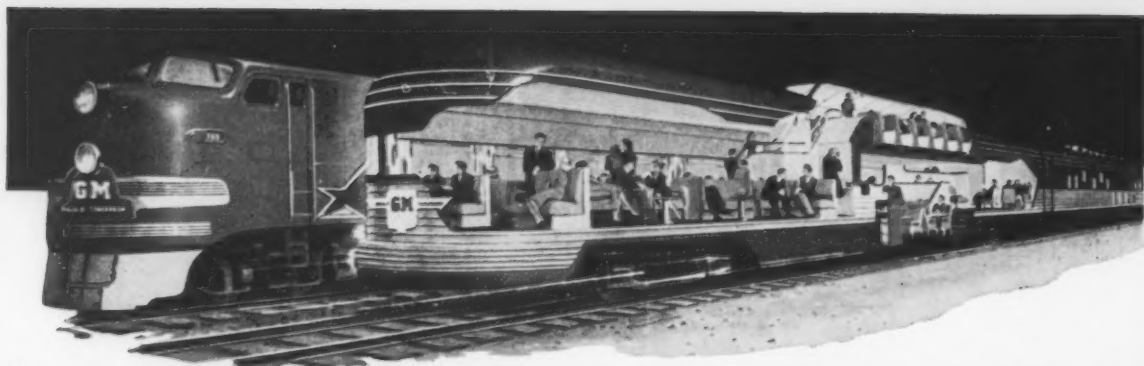
**Distributors for
Kinetic's "Freon" Refrigerants**

VIRGINIA
Refrigerants



"V-METH-L"
*Buy from Your
Wholesaler*

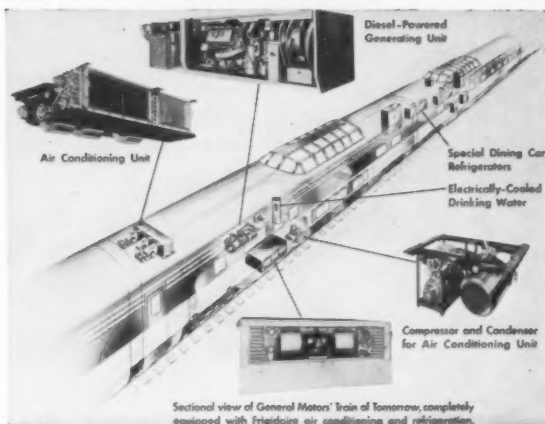
WEST NORFOLK • NEW YORK • BOSTON • DETROIT



DEPENDABLE VALVES DO THEIR PART ON



A-P 7381 Refrigerant Solenoids—popular with Air Conditioning and Refrigeration Engineers—are doing their part on General Motors Thrilling Train of Tomorrow.



General Motors' Thrilling **TRAIN of TOMORROW**

Railroad travelers for years to come will praise the magnificent effort of General Motors Corporation in creating this newest word in traveling comfort and pleasure. For the amazing Train of Tomorrow is smoother-riding, has more restful roomy chairs, the sleeping comfort is increased, you dine in a roof-garden setting and ride in complete air conditioned comfort. All these and more make the Train of Tomorrow a truly remarkable achievement in vacation or business travel . . . a thrill to see today . . . a joy to experience tomorrow.

And A-P Dependable Refrigeration Valves are standard equipment on this fine new train. Just as A-P contributed to human comfort in the first air conditioned streamliners to race over the rails years ago, so A-P Valves again contribute to comfort in the new Train of Tomorrow.



New Astra Dome a 32 foot observation deck offers a "Giraffe's eye view of landscape and skyline."

AUTOMATIC PRODUCTS COMPANY

2486 NORTH THIRTY-SECOND STREET, MILWAUKEE 10, WISCONSIN

Export Dept., 12 East 40th St., New York 16, N. Y.



DEPENDABLE *Refrigerant Valves*

STOCKED AND SOLD BY GOOD REFRIGERATION WHOLESALEERS EVERYWHERE • RECOMMENDED AND INSTALLED BY LEADING REFRIGERATION SERVICE ENGINEERS

Don't take a chance!

If you operate your business like a pinball machine you're taking dangerous risks with your profit possibilities. Successful businesses are built only upon sound business principles, intelligent and aggressive merchandising, and thorough knowledge of products and techniques. Better YOUR business by making the most of the



profit-building articles in this month's issue—



NEW SALES OPPORTUNITIES

"THERE'S MONEY IN MARINE REFRIGERATION" . . . how refrigeration firms in seaboard cities can cash in on sales to and service for the men who "go down to the sea in ships."

"THE FROZEN FOOD EQUIPMENT PICTURE" . . . a comprehensive analysis of the overall market for frozen food equipment, from the processing plant to the private home.

"THE LAW LENDS A HAND" . . . how local legislation paved the way for increased sales of cooling equipment to bars, taverns, and roadhouses.



COOLING EQUIPMENT SELECTION

"AIR DISTRIBUTION IN AIR CONDITIONING" . . . a guide to the selection of proper air distribution equipment for any installation.

"COOLING FOR HUMAN COMFORT" . . . how to properly select equipment using water as a cooling medium.



SUCCESS STORY

"PERCENTAGE-WISE" . . . here's how one dealer rang up a 23% net profit in his first full year of operation. 'Nuff said?

THE REFRIGERATION INDUSTRY

